

Original Articles

THE UNCOVENANTED AND SUBORDINATE MEDICAL SERVICES

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I.—THE UNCOVENANTED MEDICAL SERVICE

EVEN so early as the end of the eighteenth century we find instances of European medical men, not members of the Company's regular medical service, practising in India, and, in some cases, holding appointments under Government. Dr Rowland Jackson, a member of the Royal College of Physicians, London, was granted permission to practise in Bengal, in a letter from the Court of Directors, dated 4th July 1777, and came out to Calcutta in the following year. In those days, and indeed up to a much later date, the physician, both socially and professionally, stood distinctly higher in position than the surgeon. Soon after his arrival, Dr Jackson requested the Bengal Government to employ him as Physician to the Company, and Inspector of the Company's hospitals, the Company's medical officers being only surgeons. This application, from a new-comer in the country, to be placed practically at the head of the Bengal Medical Service, naturally excited great indignation among the officers of the regular service. A petition, signed by fourteen officers,(1) protesting against any such appointment, was sent to Surgeon-General Daniel Campbell, and by him forwarded to Government. This petition may be seen in the original Consultations of 26th April 1779. The petitioners state that they have heard a rumour that Dr Rowland Jackson is to be appointed Physician to the Company, that such an appointment is unprecedented, and derogatory to the whole body of surgeons in the service, who have hitherto carried out both medical and surgical duties.

The Consultations of 30th April 1779 contain minutes by the different members of Council on this petition.

A minute by the Governor-General, Warren Hastings, suggests that Dr Jackson be appointed Physician Extraordinary to the Presidency, on a salary of [blank] per month, to be called in as a consultant to the hospital or private patients, but not to be on the strength of the establishment.

Sir Eyre Coote, the Commander-in-Chief, had no objection to allow Dr Jackson a stipend, "provided it does no injury to gentlemen against whom there has been no complaint for want of capacity in their profession, and many of whom from long experience must be sufficiently qualified to discharge the particular functions of their stations."

Mr Francis approved of Dr Jackson's being employed, and would prefer that "the motion had gone further and assigned him a direct inspection over the hospitals, which I conceive might be done without the smallest diminution of credit or emolument to the surgeons. The offices of surgeon and physician are in my judgment totally distinct."

Mr Wheeler agreed with Mr Francis.

Mr Barwell disapproved. He had no objection to giving Dr Jackson a salary, but without authority over the members of the service. He quoted a similar case in which great opposition had been made, in 1760 or 1761, to the appointment of a physician named Banks,(2) who finally joined as a surgeon, like others.

In the Consultations of 13th May 1779, Dr Jackson was appointed "Medical Attendant to the Civil and Military Servants of the Company, when called upon," on a salary of Rs 600 a month, with Rs 200 house-rent. He was subsequently appointed Physician to the Jail. He died in Calcutta on 29th March 1784. His tombstone may still be seen in South Park Street Cemetery.

The *Calcutta Gazette* of 6th June 1811 contains a notice of the death of Dr John Bunette, Police Surgeon, Calcutta, and that of 24th October 1816 notes the death "at Mongher, lately," of Dr Francis de Souza, M.D., late Police Surgeon. Dr Bunette had previously served for twenty-five years, 1769 to 1794, in the Madras Medical Service, and had been pensioned. The appointment of Police Surgeon, Calcutta, was held by uncovenanted medical officers until a comparatively recent time; about 1878 it was combined with that of Superintendent of the Campbell Hospital, when the late Dr S C Mackenzie succeeded Dr C T O Woodford as Police Surgeon. These two posts were again separated towards the end of 1906, when an officer of the Indian Medical Service was appointed Police Surgeon. In Bombay this appointment is held by a medical officer who is not a member of the Service.

The regular Uncovenanted Medical Service appears to have crept into existence gradually during the second quarter of the nineteenth century. I have never seen any formal order constituting such a service. The Court of Directors was always extremely jealous of any attempt on the part of the Governments who represented them in India to make appointments to any of the commissioned or covenanted services, civil, military, or medical. The medical service was naturally the one in which such local appointments were most often made, as the number of medical officers was always only just sufficient to fill the sanctioned posts, and to provide for a small proportion absent on furlough. Consequently, whenever any sudden demand arose, from war, famine, or pestilence, for extra medical officers, the regular service was found insufficient in numbers to cope with the emergency. To apply for more men from home was of little use, owing

to the length of time required for communication between India and England. On several such occasions, in the Mysore and Mahratta wars of 1780-81, the fourth Mahratta war of 1817-18, and the first Burmese war of 1824-25, the Indian Government made numerous local appointments of assistant surgeons. On the first occasion, the Court of Directors ordered the removal of all the locally appointed men, and filled their places by men sent out from home, but allowed the local men to enter again, junior to the new appointments, as vacancies occurred. On the second and third occasions the Court insisted on the removal of all the locally appointed men. About half of them managed to obtain commissions in the regular way, by nomination at home, and kept their place, the others, who were not so fortunate, were gradually struck off. In the first China war of 1840-42, a number of similar appointments were made, but the men so appointed were not shown in the Army Lists, as they had been on the earlier occasions, as part of the regular service, but were considered as only temporarily engaged.

But, while they could not make appointments to the regular commissioned medical service, the Indian Government appear to have found it feasible to make appointments to a local and inferior or uncovenanted medical service, which thus gradually grew into existence. Medical officers were thus locally appointed to some of the smaller civil stations, not recognised as regular collectorates, and to the regiments composing various irregular forces, such as the Gwalior contingent. Many of the officers thus appointed succeeded in time in getting nominated as Assistant Surgeons, and so entering the commissioned service. Two uncovenanted medical officers subsequently became professors in the Calcutta Medical College. R. O'Shaughnessy served as Demonstrator of Anatomy from 1839 to 1841, got a commission as Assistant Surgeon on 4th December 1841, became Professor of Surgery in 1845, and held that post till he went on furlough in 1859, returning on 4th May 1860. The late Dr. S. C. G. Chuckerbutty served as an uncovenanted officer from 1850 to 1854, when he went to England, and entered the I.M.S. at the first competitive examination for commissions therein, on 24th January 1855. He became Professor of Materia Medica in 1864, and held that post till he went on furlough in 1874, dying in London on 29th September 1874.

A despatch from the Secretary of State, No. 61 of 16th April 1863, published in I.M.D. Circulars, No. 14 of 23rd June 1863, makes these appointments pensionable.

"Uncovenanted medical officers may be admitted to the benefits of the Uncovenanted Service Pension Rules, as recommended by your Government."

Rules regarding the Uncovenanted Medical Service were published in Government of India Home Department, No. 1/77-84 of 17th March

1885, and are quoted in I.M.D. Circulars of 1885. They run as follows —

"With reference to paragraph 2 of Resolution of the Government of India in the Home Department (Medical), No. 17/481-494, dated 31st October 1884 (3), the following rules are prescribed for uncovenanted medical officers in the Bengal Presidency.

"Uncovenanted medical officers are engaged, as occasion arises, to fill the appointments specified in the Resolution above cited.

2 "Candidates who desire to enter the service should apply to have their names recorded in the office of the Surgeon General with the Government of India, where a register for this purpose will be kept.

3 "Candidates may be of any nationality, but must be licentiates or graduates in medicine and surgery, and must produce satisfactory evidence that they bear a good character, and that they are physically fit for the service.

4 "Candidates, as a rule, must not exceed 28 years of age.

5 "Assistant surgeons may be made uncovenanted medical officers by selection.

6 "Uncovenanted medical officers in the Bengal Presidency will all be borne on one list, and all additions to this list, as well as the distribution to particular provinces, will be made by the Government of India on the recommendation of the Surgeon General.

7 "Transfers from one charge to another within any province will rest with the Local Government concerned, but no uncovenanted medical officer can be transferred from one province to another, except by the Government of India.

8 "The following is the scale of consolidated salaries for uncovenanted medical officers when in medical charge of civil stations —

Below 5 years of service	Rs 350 per mensem
Above 5 and under 10 years of approved service	" 450 " "
Above 10 and under 15 years of approved service	" 550 " "
Above 15 years	" 700 " "

"This scale of salary is to be considered as payment in full for all official medical and sanitary duties, inclusive of those appertaining to dispensaries and police, etc., save that for the medical charge of a lunatic asylum, or a college, or for the administrative charge of a jail, the extra allowance admissible to a covenanted medical officer for the like charge will be given. Travelling allowance will also be given under the rules prescribed in the Civil Travelling Allowance Code.

9 "An uncovenanted medical officer not holding a substantive appointment, if appointed to the medical charge of a civil station for which an uncovenanted medical officer or a covenanted medical officer is authorised, shall be allowed an aggregate acting allowance of Rs 350 per mensem.

10 "The service of an uncovenanted medical officer towards the periodical increments of pay reckons from the date of his first permanent appointment to the medical charge of a civil station.

11 "An uncovenanted medical officer, in permanent medical charge of a civil station, is allowed to count towards the periodical increase of pay the time passed in medical charge of a Government steamer.

12 "As regards leave and pension, uncovenanted medical officers come under the rules applicable to the uncovenanted service of Government generally."

Previous to the publication of the above rules, appointments to the uncovenanted medical service had been made direct by the Provincial Local Governments, and the officers so appointed had not been considered liable to transfer to other provinces.

Officers of this service were known as civil medical officers, the title of civil surgeon being only applied to commissioned officers, up to 1903, when Govt of India, Home Dept, Resolution No 405-418, Medical, of 21st April 1903, extended the title of Civil Surgeon to all medical officers holding civil surgeonies, covenanted and uncovenanted alike.

As an instance of a successful career in this service we may mention that of Sir John William Tyler, born in 1839, served in the North-West, now the United Provinces, for many years as Superintendent of Agra Jail, subsequently as Inspector-General of Jails. He was made a CIE in 1886, and Knighted in 1888.

This service is now gradually dying out, no new appointments having been made since the last decade of the nineteenth century.

II.—THE SUBORDINATE MEDICAL SERVICES.

From very early times the Company's medical officers employed indigenous assistants in their hospitals. These assistants, at first, were merely native servants trained locally to act as dressers, under the immediate supervision of their superiors. Up to the middle of the eighteenth century such native servants, and occasional European soldiers, told off to help in the hospitals, who gradually learned to act as apothecaries, were the only medical subordinates employed.

From such small beginnings sprang the present subordinate medical services. Of these, exclusive of the Civil Apothecaries in Madras, now gradually dying out, there were four—

The Military Assistant Surgeons

The Civil Assistant Surgeons

The Military Hospital Assistants

The Civil Hospital Assistants

The Bombay Consultations of 30th June 1738(4) contain a list of the subordinate staff of the Bombay Hospitals, as it existed, and also a new scale then introduced—

Present scale

	Rs
Apothecary	10
Black assistant	6
Black doctor to Regiment	12
Black doctor at Mahim	6

Proposed scale

	Rs
Apothecary	10
Mate	10
Four assistants	22
Two assistants for going abroad	12

The hospital assistants' pay is fixed at six rupees, and that of out-door assistants at Rs 8, sums which do not fit into the proposed scale given above, so apparently must have been in addition to it.

The pay seems very small, but was not out of proportion to that of medical officers. In the previous year, the Consultations of 5th August 1837 contain a petition from Assistant Surgeon Peachey, that he had served for several years, and

never received more than Rs 24 per month. The Board declined to increase Dr Peachey's pay, but gave him a gratuity of Rs 400, equal to about eight rupees a month for all the time he had served. He would seem, therefore, to have served for a little over four years.

The Madras Press Lists of 30th October 1740 contain a petition from the "black doctor" at Fort St David, to allow his son one Pagoda(5) a month for assisting in the garrison. The petition was granted.

When the Company raised a standing army, native medical attendants were appointed to each corps and regiment. A return of the Company's Bengal Army, dated 21st January 1762, quoted in Broome's "History of the Bengal Army" (Appendix, p. xxvi), gives nineteen "black doctors" to a grand total of 8,338 rank-and-file, or about two per battalion of a thousand men. Another return, on page xxxvii, six pages further on, gives the troops under the command of Captain Peter Castrau at Patna on 30th April 1763, and shows two battalions, the 2nd and 3rd, each with a strength, including officers, of 1,090 men, and three "black doctors," while a third battalion, the 5th, had two "black doctors" to 529 men. Four years later, in 1767, the Madras Government sanctioned the appointment of a native doctor, on the pay of a havildar, to each battalion of sepoys (6). At the end of 1785, a native doctor was attached to each battalion of native infantry, on Rs 31 per month, a sepoy's pay plus stoppages (7). In January 1788, native dressers were appointed to each native cavalry regiment on Rs 35 per month, a trooper's pay plus stoppages (8). These subordinates seem to have established their claim to be considered pensionable servants before the end of the eighteenth century. The Proceedings of the Calcutta Medical Board of 8th April 1797 contain a letter from Assistant Surgeon G. Fraser, of the 2nd Battalion, 2nd N.I., stationed at Kishanganj, in which he recommends Ramnath, Brahman, native doctor of the Battalion, for pension, and gives a certificate that he has served for twenty-six years. The Superintending Surgeon of Bahampur, Walter Ross Munro, forwarded the letter to the Medical Board, with a recommendation that they would lay before the Commander-in-Chief "the justice of including that useful class of servants, the native doctors, in the benefits of the invalid establishment." The claim seems to have been admitted, for the Proceedings of the same Board of 13th September 1798, note that the native doctor of the 2nd Battalion, 2nd N.I., has lately been invalidated, and that another native doctor is required in his place.

Wilson's History of the Madras Army (9) gives the strength of the Madras Military Medical Department in 1771, with the stations to which officers of the different grades were posted. The list includes 17 surgeons, 3 assistant surgeons, and 8 "hospital assistants." The members of the

last grade were not eligible for promotion above that rank. They were posted to the most important stations, under surgeons, and appear to have carried out duties like those now performed by the Military Sub-Medical Department.

How or when it was first instituted I have not been able to discover, but a Subordinate Medical Department certainly existed in Madras in the latter part of the eighteenth century. There are many allusions, in the Madras Press Lists, at this time, to Sub-Assistant Surgeons. On 5th August 1781 the Native Surgeon at Tellicherry asks that his pay may be increased to Rs 30 per month. Tellicherry and Anjengo were officered from Bombay, but received orders from Madras. On 24th December 1784 Sub-Assistant Surgeon John Noi, of the Bombay detachment, is permitted to draw Rs 50 per month. On 17th January 1786, Mr. Piscall is appointed Sub-Assistant Surgeon at Vellore. On 7th February 1788 the Hospital Board enquire what is the number of Sub-Assistant Surgeons in the Service. Unfortunately the answer is not recorded. On 27th May 1788, Mr. Paterson is mentioned as Sub-Assistant Surgeon at Vellore. On 27th June 1788 orders are given that Sub-Assistant Surgeon Domingo Rosa should be retired, and on 23rd December 1788 Sub-Assistant Surgeon Andrew Davies is pensioned. The two last notices show that this class of officers must have been in existence for a good many years. It is probable that these Sub-Assistant Surgeons were the same as the Hospital Assistants mentioned above. The Proceedings of the Civil Medical Board do not mention this class of officers as existing in Bengal.

Some of the medical officers whose names appear in the Bombay Army Lists seem to have been practically only subordinates. Three Assistant Surgeons in the Bombay List are called "unranked assistant surgeons, not to rise." They were, Christian Mathias Kehn, entered December 1772, Gabriel Alvarez, entered March 1786, and William Schott, entered 1799. From their names, they appear not to have been Englishmen. None of the three ever rose to the rank of Surgeon, though the first two served for thirty and twenty years respectively. A letter from the Bombay Council, to the newly established Hospital Board, dated 1st September 1787, sanctions the appointment of Gabriel Alvarez as a mate in the Sepoy Hospital, but states that in point of rank and pay he is to be considered as a native assistant only. Some of the earliest Assistant Surgeons in Madras appear to have held a like subordinate status, but I have not come across any reference to a similar class in Bengal.

A — The Military Subordinate Medical Department

The military sub-medical department in Bengal appears to have been definitely constituted in the first years of the nineteenth century. A general

order, dated 15th June 1812, published in *Calcutta Gazette* of 2nd July 1812, approves of a plan submitted by the Medical Board for training boys from the Upper and Lower Orphan Schools and from the Free School, as compounders and dressers, and ultimately as apothecaries and Sub-Ass't Surgeons. This order lays down that twenty-four boys, of 14 or 16 years of age, shall be selected from these schools, and posted, ten to the Presidency General Hospital, ten to the Garrison Hospital, at Chunar, and four to the Calcutta General Dispensary. Apparently 24 boys were to be selected annually, though this is not definitely stated. After they were considered by their immediate superior officers, and by the Superintending Surgeon, sufficiently qualified, they were to be posted, first to native corps, and later to European corps, field hospitals, and medical store depots. After two or three years' service in such appointments they were to be eligible for promotion to the rank of Sub-Ass't Surgeon or Apothecary. While under instruction, the Surgeon under whom they served was directed to draw a sum of Rs 25 per month for each boy, for his food and clothing. When posted as dressers, they were to receive Rs 35 per month, and on promotion to Apothecary or Sub-Ass't Surgeon Rs 100 per month. This is the earliest instance I have seen of the use of the title of Sub-Ass't Surgeon in Bengal. Some members of this department were from time to time promoted to the commissioned ranks. Apothecary Robert Nighlind was appointed an acting Asst Surgeon on 21st August 1819, and posted as Civil Surgeon of Ilorwih. He died a year later, on 20th October 1820, holding that appointment. Most of the Asst Surgeons temporarily appointed in India in 1817-19 were struck off from 31st October 1820. John Bowron, born in February 1799, entered the sub-medical department as a medical pupil on 1st July 1813, was appointed Apothecary on 7th September 1816, promoted to Asst Surgeon on 25th December 1825, became Surgeon on 16th December 1840, retired on 31st December 1851, and died at Hove, Brighton, on 5th March 1899, aged one hundred.

The following extract from Bombay General Orders is quoted in the *Asianic Journal* for December 1819—"25th June 1818 Private John Bly, lately arrived is a recruit for the Hon'ble Company's Service, is transferred from the Military to the Medical Establishment, and appointed a Sub-Ass't Surgeon until further orders."

A Madras G.O. of April 1827 organised the sub-medical department, of course a purely military department, into two branches apothecaries and dressers. The latter became hospital assistants in 1868.

A Madras G.O. dated 9th August 1819, orders that "the medical pupil establishment, which was limited to thirty, is augmented, to receive forty boys for professional instruction." This order apparently refers to the Apothecary class.

By G G O No 200 of 25th June 1847, it was ordered that hospital apprentices, after two years' service in military hospitals, should be sent to the Calcutta Medical College, to undergo there a course of two years' professional instruction.

The Bengal Medical Regulations of 1851 give the grades of the sub-medical department, and the scale of pay for each, as follows —

	Pay	Furlough pay	Pension	Invalid allowance
	Rs. A P	Rs. A P	Rs. A P	Rs. A P
Senior apothecary	250 0 0		75 0 0	100 0 0
Apothecary	110 11 0	50 0 0	40 0 0	80 7 0
Steward	91 5 0	30 7 0	30 7 0	60 14 0
Assistant apothecary	55 0 0			40 0 0
Assistant steward	35 0 0			40 0 0

In 1886, by G O G G No 550 of 5th June, the military sub-medical department was divided into two classes, the Apothecary class and the Hospital Assistant class, the grades of Steward and Assistant Steward, having now dropped out. The first comprised the following classes —

- (a) Senior apothecary
- (b) Apothecaries, first and second class
- (c) Assistant apothecaries, first and second class
- (d) Hospital apprentices

All ranks above hospital apprentice ranked as warrant officers. Promotion from second to first class Assistant Apothecary and Apothecary was given after five years in the lower grade. It is noted that the rank of Honorary Assistant Surgeon is not a grade, but a rank and title given as a special distinction. Such officers were to be supernumerary to the establishment, and were not to be employed as medical subordinates.

In 1894, by the Royal Warrant of 12th March 1894, quoted in Indian Army Circulars of 15th May 1894, clauses 63 and 64, the title of Apothecary was changed to Asst Surgeon, the two grades of Senior Asst-Surgeon receiving Honorary Commissions as Captain and Lieutenant respectively, and in the following year, under G G O No 370 of 1895, the military sub-medical departments of the three Presidencies were amalgamated.

For more than half a century past many of the senior members of this service have been employed, with credit and success, in independent charges, as Civil Surgeons, and in various other capacities. Two at least have received Orders. Honorary Assistant Surgeon Joseph Anderson, of the Bombay S M D, received the Persian order of the Lion and Sun more than fifty years ago. Major T H Hill, of the Bengal S M D, was made a C I E on 9th November 1901. And Hospital Apprentice Arthur Fitzgibbon, of

the Bengal S M D, was awarded the V C on 13th August 1861, for gallantry at the capture of the North Taku Fort, in China, on 21st August 1860.

Many officers of the Military Sub-Medical Department have, from time to time, obtained commissions in the I M S, under the Company's rule by nomination, in more recent years by competition. Curiously, most of these officers have served in Madras, either in the subordinate or in the commissioned service, or in both. We have already mentioned the case of John Bowron, of Bengal. Among other instances may be given the following:—

Alexander Boggs, born in July 1823, Assistant Apothecary, Madras, 13th October 1843, resigned and went to Europe, served with the Turkish contingent in the Crimea in 1854-55, M R C S 1856, Assistant Surgeon, Madras, 29th October 1856, served with the Sagai Field Force, in the Indian Mutiny, in 1858, received the Order of the Medjidie, 1858, resigned 31st December 1861, became M D, Paris, 1866, with a thesis "Notes et Reflexions Medico Chirurgiales sur les Phlegmasies de la Matrice," died in Paris, 5th October 1890.

John Shortt, born 26th February 1822, Assistant Apothecary, Madras, 20th January 1846; M D, King's College, Aberdeen, 1854, M R C S and L S A, 1854, also Member of the College of Veterinary Surgeons, Edinburgh, 1854, M R C P., London, 1859, Assistant Surgeon, Madras, 20th September 1854, Surgeon, 20th September 1866, Surgeon Major, 1st July 1873, retired 12th February 1878, died at Yeicand, 24th April 1889. Dr Shortt was one of the first to experiment with the poisons of Indian snakes. He was also a voluminous writer, chiefly on agricultural subjects, and published the following works:—"An Essay on the Culture and Manufacture of Indigo," 1860, "A Handbook to Coffee Planting in Southern India," 1864, "An account of the Tribes on the Nilghees," 1868, "The Hill Ranges of Southern India," 1871, "Manual of Family Medicine for India," 1875, "Manual of Indian Cattle and Sheep," 1876, "Monograph on the Cocoanut Palm," 1888, "Manual of Indian Agriculture," 1889.

James Keess, born 3rd February 1829, Assistant Apothecary, Madras, 11th September 1848, M R C S, 1855, M D, Marischal College, Aberdeen, 1856, L R C P., London 1856, Assistant Surgeon, Madras, 4th August 1856, Surgeon, 4th August 1868, Surgeon Major, 1st July 1873, Principal, Medical College, Madras, retired, 1884, died at Stuttgart, 29th December 1900.

Daniel Robert Thomson, Assistant Apothecary, Madras, 25th April 1855, M D, St Andrews, 1860, M R C S, 1861, Assistant Surgeon, Madras, 1st April 1867, Surgeon, 1st July 1873; C I E, 1st January 1879, Surgeon Major, 4th April 1879, retired, 14th May 1888.

B—*The Civil Sub-Medical, or Provincial Medical Department*

An article in the *India Journal of Medical and Physical Science*, edited by F. Corbyn, for 1836 (page 543), states that the Medical Board have suggested to Government a plan for organising a Civil Sub-Medical Department. The foundation of the Medical Colleges, those of Calcutta and Madras in 1835, and that of Bombay a little later, gave the opportunity of forming such a department, by educating native students of medicine up to a much higher level than had been attempted by the previous schools for native doctors. Such a school for native doctors had been opened in Calcutta in 1822. It was transferred to the new Medical College in 1839.

The first graduates of the Calcutta Medical College, four in number, qualified in February 1839, and soon obtained appointments in the new hospitals which had been opened in the mofussil during the preceding decade. As an instance, Babu Badan Chander Chaudhuri, (10) who was one of the first batch of students who entered the Medical College in 1835, though not one of the first batch to qualify in 1839, was appointed on 23rd February 1842, to the Linambala Hospital, Hughli, which had been opened in 1836.

In January 1849 the Bengal Government published rules for regulating the pay and promotion of Sub-Assistant Surgeons. These may be summarised as follows. All students of the first class (*i.e.*, other than those of the vernacular class for native doctors), at the Medical College, should be admitted, if they so desired, to the public service as Sub-Assistant Surgeons. They should be ranked in three grades, drawing respectively 100, 150 and 200 rupees a month, and should spend seven years in each of the two junior grades, and then pass an examination before promotion. Failure at this promotion examination on two successive occasions rendered the Sub-Assistant Surgeon liable to removal from the service. Promotion might, however, be given for distinguished merit in less than seven years. Finally, it is definitely stated that the Court of Directors have ruled that the Sub-Assistant Surgeons "shall not, at any time, be admitted to the benefit of the rules under which pensions are granted to the members of the Uncovenanted Service."

The Secretary of State's Order No 61, of 16th April 1863, under which Uncovenanted Medical officers were made eligible for pensions, appears to have included the Sub-Assistant Surgeons, who thus became a pensionable service.

Under the Royal Warrant of 10th May 1873, the rank of Assistant Surgeon in the I. M. S. was abolished, and by the Government of India, Home Department, Notification No 132 of 25th March 1874, the title of Assistant Surgeon was bestowed upon those who had hitherto been Sub-Assistant Surgeons.

Under Government of India, Home Department, Medical, Resolution No 1141-50 of 22nd August 1898, a new grade of Senior Assistant Surgeons was created, on Rs 300 a month, and orders were issued that a certain number of Civil Surgeonies should be reserved for and filled by Civil Assistant Surgeons. The number was fixed at nineteen for the whole of India, distributed over the different provinces, but was increased in the following year to twenty-eight. Hitherto, however, so large a number have never actually been appointed.

The Civil Assistant Surgeons, from the first, were recruited and organised provincially, *i.e.*, in separate cadres, one for each province.

A few members of this service have subsequently entered the I. M. S., either by nomination or competition.

It will be seen that, except for the establishment of their right to pension, and the creation of the grade of Senior Assistant Surgeon, the service of Civil Assistant Surgeons stands exactly where it did when it was first created, over sixty years ago, although, in the interval, the standard of medical education has greatly advanced, and the pay of almost every service in the country has been increased.

The epithet *Subordinate* is quite misused, when applied to this service, and should be replaced by the title *Provincial*. They stand in exactly the same relation to the Medical Department that Deputy Magistrates fill to the Executive, Sub-judges and Munsiffs to the Judicial, branches of the Indian Civil Service.

C—*The Military Hospital Assistants*

We have seen that a native medical staff, somewhat similar in status to the present Hospital Assistants, existed a century and a half ago, in the "Black doctors" attached to the native troops, also that, by the end of the eighteenth century, they appear to have established a claim to pension.

A school for training native doctors was established in Calcutta by G O G G of 21st June 1822, published in the *Calcutta Gazette* of 22nd June 1822. This General Order consists of 39 paragraphs, and fills two and a half columns of small print in the Gazette; it is, therefore, far too long to quote in full. It may be summarized as follows—

(Para 4) Twenty students were to be admitted, vacancies to be filled up as they occurred (Para 5). Students must be able to read and write Persian or Nagri, and must be between the ages of 18 and 26 (Para 7). Sons of native doctors to have preference for admission (Para 8). Students to be regularly enlisted as soldiers, and to succeed to vacancies on the establishment of native doctors as they occurred, in the Army or in the Civil Department. Period of enlisted service to be fifteen years, from date of leaving the school, after which they might demand discharge, in time of peace (Paras 9-10).

Duties of Superintendent, instruction of students, preparation of professional manuals in the vernacular, correspondence (*Para 11*) The school to be under the Medical Board (*Para 18*) Students to be attached to the Presidency General Hospital, the King's Hospitals, the Native Hospital, and the General Dispensary, for practical work, as convenient (*Para 23*) The Medical Board may dismiss students, for good cause (*Para 26*) When the Superintendent considers a student sufficiently qualified, he will certify the same to the Medical Board, who will grant a certificate to the student, and appoint him as a Native Doctor upon the occurrence of a vacancy (*Para 27*) Rupees eight per month allowed to each student for clothing and maintenance (*Para 29*) Pay of native doctors educated at the school to be higher than that of those previously serving

Old scale,	New scale, for school men
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In Garrison or Civil Station	Rs 15	Rs 20
On service	" 20	" 25

(*Para 30*) Pensions to be granted to native doctors disabled by wounds or by disease contracted on duty (*Para 31*) Scale of pensions

With less than seven years' service	Rs 7 per month
Seven to fifteen years' Military	One third field pay
Do Civil	One-third garrison pay
After fifteen years' service	Rs 10 per month
After twenty two years' service	Full pay

(*Para 33*) Native doctors not to be dismissed except by court-martial (*Para 34*) All are liable to military service, whether serving in military or civil department (*Para 35*) Present native doctors are not affected by these rules, except that those who are under the age of 26 may apply for transfer to the school (*Para 36*) Salary of Superintendent, Rs 800 (*Para 39*) Surgeon James Jameson appointed Superintendent

Jameson died in Calcutta in the following year, on 20th January 1823, and was succeeded by Surgeon Peter Bleton. The school was transferred to the new Medical College in 1839. In 1852 a Bengali Class for Native Doctors was started at the College. These classes were removed to the new Campbell Medical School, at Sealdah, Calcutta, in November 1873. This school, however, has always educated native doctors for civil, rather than military employment, the requirements of the Army being supplied chiefly from the Medical Schools at Agria, opened in 1853, Labore, opened in October 1860, and Nigpuri, opened 1st October 1867.

The Medical Regulations of 1851 give the pay of native doctors of the late Medical Institution as follows:

Pay in garrison, Rs. 20; in field, Rs. 25, on appointment

Ditto	" 25,	do.	" 30, after seven years' service
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The Military Sub-medical Department was divided into two classes, the Apothecary class and the Hospital Assistant class, by G O G G No 550 of 5th June 1868. The latter class was organised in four grades first, second, and third class Hospital Assistants, and medical pupils, the last youths under training for the service

In G O G G No 152 of 1st February 1870 were published rules for the regulation of the Hospital Assistant Service. All "passed native doctors," Hospital Assistants, and equivalent grades, were eligible for transfer to the establishment of Hospital Assistants and were graded, in the first place, according to their standing at the time "Unpassed native doctors" were to continue to bear that designation, and were to be eligible for civil subordinate duties only. All future appointments to the establishment were to be made from among the passed medical pupils, and all were liable for military duty, even if chiefly employed in the civil department

This service was reorganised, on considerably increased rates of pay, by Clause 85 of Indian Army Circulars of 1900. The grade of Sub-hospital Assistant was abolished. The Senior Hospital Assistants were granted commissions as such, the first class ranking as Subadars, the second class as Jamadais. All Hospital Assistants were granted warrant rank, but junior to all Military Assistant Surgeons. The pay of the various grades was fixed, with extra allowances for being qualified in English, as follows —

	Rs	Rs
Senior Hosp Asst	1st class, pay 70, English qual	30
" "	2nd " " 55 "	25
Hosp Asst	1st " " 40 "	20
" "	2nd " " 30 "	10
" "	3rd " " 20 "	5

D — The Civil Hospital Assistants

The formation of this service was ordered in Government of India, Home Department (Medical), Resolution dated 9th January 1878, published in Circulars of the Surgeon-General, India, No 140 of 11th March 1878

Prior to this date, all subordinate civil duties had been performed by military native doctors and Hospital Assistants, whose services were only lent to the Civil Governments, and who were at all times liable to recall to military duty

Under the above orders a separate cadre of Civil Hospital Assistants was organised for each province. Military Hospital Assistants then serving were allowed to volunteer for transfer to any province in the new civil branch. "Local Native Doctors" were to be gradually absorbed into the new service

The Civil Hospital Assistants were graded in three classes, as follows —

	Rs	Rs
Third class, under seven years' service	pay 20	English qual 5
2nd " seven to fourteen	" 25	" 10
1st " over fourteen	" 35	" 20

The pay and prospects of this service were much improved in 1901, by Government of India, Home Department, Medical, Resolution No 1002—1014 of 4th July 1901, which regraded the service, with grades and pay as follows —

Rs

Fourth grade, under five years' service, pay	25
Third grade, five to ten years' service, pay	35
Second grade, ten to fifteen years' service, pay	45
First grade, sixteen to twenty years' service, pay	55
Senior grade	70

Promotion from the second to the first, and from the first to the senior grade, is by selection, to the third and second grades by examination. Qualification in English is necessary before entering the service.

From the beginning of 1910 a revised scale of pay was introduced, giving a further increase, as follows :—

Rs

Fourth grade	30
Third „	45
Second „	55
First „	65
Senior grade, second class	80
„ „ „ first „	100

Promotion from the fourth to the first grade to be by seniority, subject to passing examinations, from the first to the senior grade, and within that grade, by selection. The numbers in the first class of the senior grade to be restricted to two per cent., and in the second class to ten per cent, of the total strength.

From April 1910 the title of Sub-Assistant Surgeon was bestowed upon the Civil Hospital Assistants, instead of their former title, with its almost menial significance.

There is probably no service in India in which so much difference exists between the best and the worst members as that of the Civil Hospital Assistants. It would greatly improve the standard of the whole class if arrangements were made under which the best individuals might, after further study, qualify for, and be promoted to, the Assistant Surgeon class.

E.—The Civil Apothecaries

The Civil Apothecary class, intermediate between the Civil Assistant Surgeons and the Civil Hospital Assistants, exists in Madras only. The formation of this class was ordered in August 1873, and the first batch of students educated for it passed out in 1878. The class was recruited for a few years only, no new appointments having been made since 1884, and it is now rapidly dying out, the places of its members being taken by Civil Hospital Assistants.

REFERENCES

- (1) R. Knight, D. Urquhart, T. Gillies, J. Keill, J. Lynd, Jas. Stark, C. Francis, J. Hunter, A. Carnegie, A. Ross, J. Robertson, John Stark, A. Hotchkiss, W. F. Gardner
- (2) I do not know of any other reference to this Dr Banks
- (3) This resolution gave a list of all medical appointments in India, specifying which were reserved for covenanted and uncovenanted officers respectively.
- (4) Bombay Gazetteer, Vol. XXVI Part III, pp. 547 & 548
- (5) Fort St. David Consultations, Vol. XII, pp. 118–125
- One Pagoda was worth about three and a half rupees
- (6) Wilson History of Madras Army, Vol. I, p. 267
- (7) Ibid, II, 176
- (8) Ibid, II, 158
- (9) Vol. I, p. 338
- (10) Babu B. C. Chudhuri retired in 1857, and lived in Hughli till his death on 18th August 1907, at the age of 97.

HISTORICAL NOTE ON CHOLERA IN INDIA

By PATRICK HEHIR, M.D., I.R.S. (Lb.),
IT COL, I.M.S.

SOME treatises on cholera, whilst alluding cursorily to outbreaks of that disease in various parts of India during the sixteenth and seventeenth centuries bind themselves to the statement that the first authenticated outbreak in India took place in the Marquis of Hastings' camp in Jessoore in 1817–18. Some time ago, however, I came across a curiously interesting note on the history of cholera in this country in an old book.* From the account of the disease given, it would appear that cholera must have existed in Madura for centuries before the compilation of the book referred to, although the actual time of its origin in that part of India is not mentioned, and as the author remarks "it is impossible to ascertain." But it is certain that it was well known before the notorious outbreak of Jessoore in 1817–18, which is erroneously supposed by many to have been the first authenticated and reported instance of a cholera epidemic in India. It is beyond question that cholera had occurred in Madura in an epidemic form in the year 1815–16 the collector of that district having reported on the extent to which it decimated the population, and it was even then not considered to be a new disease. From the description given of the history of the disease in *The Madura Country*, it appears to be highly probable that cholera was well known in the kingdom of Madura so early as the year 1609. A letter of Robert de Nobilibus, dated Madura, 22nd April 1609, mentions the prevalence of a violent epidemic disease called the *Moidichien*, and in later letters written by Jesuit Missionaries of Madura, fatal epidemic outbreaks of the Moidichien disease are described in such terms as to lead one to think that their accounts could hardly apply to any other disease than cholera. For instance, Father Martin, writing in

* *The Madura Country*, by J. H. NELSON, M.A., Madras Civil Service

1701, gives the details of an attack of *Mordechien*, which almost killed one of his catechists in the following manner "An accident which alarmed us all, occurred to one of the catechists whom the father had sent to the Prince He had walked during the greatest heat of the day, and finding himself very much altered he had the imprudence to drink without taking the ordinary precautions Shortly afterwards he found himself attacked with that severe indigestion which the Indians call *Mordechien*, and which some of our French people call *Mort de chien* (a dog's death), fancying that this name is given to the disease because it brings about a violent and cruel death As a matter of fact, the disease declares itself with great pains, purging, and forces nature so violently (purges), that it is seldom that the victim escapes unless he uses a medicine which is extremely efficacious if employed immediately, but which is little known in the inland country This remedy is so potent that it cures a large percentage of the victims The disease is more frequent in India than in Europe The continual strain on the constitution caused by the burning heat of the climate, enfeebles the natural health of the body to such an extent, that the stomach is often unable to perform its functions of digestion The catechist being unable to proceed any further stopped in a village and sent a message to inform us of his condition "

"The news reached us at 9 P.M I ran at once to his succour, and found him stretched on the ground, almost unconscious and agitated by violent spasms"

The above translation is not quite literal, the actual French version as given in *The Madura County* is as follows —

"Il arriva alors à un des catechistes que le Pere avait envoyés vers le Prince, un accident dont nous fumes alarmés Il avait marché durant la plus grande chaleur du jour, et, se trouvant fort altéié, il eut l'imprudence de boire sans prendre les précautions ordinaires Des le moment il se trouva attaqué de cette grande indigestion qu'on appelle aux Indes *mordichien*, et que quelques—uns de nos Français ont appellée *mort-de-chien* s'imaginant qu'elle se nomme ainsi parce qu'elle cause une mort violent et cruelle En effet, elle se fait sentir par les douleurs les plus aiguës et qui forcent la nature avec tant de violence, qu'il est rare qu'on n'y succombe pas, si l'on n'use d'un remède qui est fort en usage sur la côte, mais qui est moins connu dans les terres Ce remède est si efficace, que de cent personnes attaquées de cette espèce de colique de *miserere*, il n'en aura pas deux qu'il n'arrache des portes de la mort Ce mal est bien plus fréquent aux Indes qu'en Europe, la continue dissipation des esprits, causée par les ardeurs d'un climat brûlant, affaiblit si fort la chaleur naturelle, que l'estomac est souvent hors d'état de faire la coction

des aliments La catechiste donc, réduit à ne pouvoir plus se traîner, s'arieta dans une peuplade à une lieue environ d'Aour, et nous envoia avertir du triste état où il se trouvait

"Cette nouvelle ne vint qu'à neuf heures du soir, je volai sur-le-champ au secours du malade, je le trouvai étendu à terre presque sans connaissance et agité des plus violentes convulsions"

The Portuguese of Goa called cholera by the name *Mordechien*, so early as 1563, and thence the word found its way to various parts of Northern and Central India, and even to other countries It would appear that Robert de Nobilibus, or some other European who visited Goa, must have learnt this Portuguese name for cholera in that place, and brought it with him to Madura The word "Mordechien" is not used by Madura natives of the present day in the sense of cholera Mordechien was a corruption of the Mahratta word *Modshi* The Mahrattas used the word in the sense of indigestion of a comparatively mild type, never in the sense of cholera, which they called by the Sanskrit name, *Visuchi*, or by other appellations

After showing in the passage quoted above, the wretched state to which the poor catechist was reduced, the good Missionary goes on to describe his method of treatment, but it is certainly open to doubt, that it was almost invariably successful When the patient was in a state of collapse, Father Martin simply applied the back of a heated sickle to the soles of his feet, until "le fer penetrait ces peaux mortes qui sont dans les noirs extrêmement dures parvint jusqu'au vif et se fit sentir au malade, and the patient having felt the hot iron forthwith began to recover But, as the Missionary naively remarks, "in some cases the patient does not feel the hot iron, and such cases are almost hopeless"

The "Mordechien" appears to have been far more common on the sea coast than in the interior for the application of the hot iron is said to have been commonly used along the former, whilst "its almost miraculous effects" were, but little known in the latter It is just possible therefore that the disease was periodically epidemic on the coast whence it spread inland Father Martin in June 1700 wrote —

"Je vous dirai seulement qu'il règne pour l'ordinaire de grandes maladies sur cette côte au temps de la pêche, soit à cause de la multitude extraordinaire de peuple qui s'y rend de toutes parts et qui n'habite pas fort à l'aise, soit parce que plusieurs se nourrissent de la chair des huîtres, qui est indigeste et malfaisante, soit enfin à cause de l'infection de l'air Cai la chair des huîtres, étant exposée à l'ardeur du soleil, se covrompt eu peu de jours et exhale un puanteur qui peut tout seule causer des maladies contagieuses."

The herding together of vast multitudes of indigent and filthy people, the awful effluvium arising from the decomposition of millions of oysters, and the eating of these when decomposing, would certainly predispose to cholera, but would not cause it. Nevertheless, it would seem to be at least as probable that true Asiatic cholera was generated on the sea coast about the Madura country, as that it sprung up spontaneously in the delta of the Ganges, under far less favourable circumstances for its origination than those described above by Father Martin in 1700. It would appear to me that in searching for the earliest seats of cholera, the sea coasts of India ought not to be entirely disregarded. It is by no means improbable that cholera has been for centuries, at least, both endemic and epidemic in more parts of India than Lower Bengal.

ARROWS AND ARROW WOUNDS IN MANBHUM

BY S. ANDERSON, M.B., D.T.M. & H. (Camb.)
MAJOR, I.M.S.,
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THE bow and arrow have been in use from the earliest times. Among the ancients specially eminent in the use of the bow and arrow one may particularise the Thracians, Parthians and Numidians, among the moderns, the Arabians, Germans and Saracens.

In later ages the bow came to be employed in England, where the archers wore light armour, a short sword, and a quiver with 20 or more arrows. The archers universally belonged to the elite of the troops and received higher pay than the rest.

Archers are still included among the fighting-men of barbarous and semi-barbarous tribes and amongst these the natives of this district and indeed of Chota Nagpur generally are trained from their youth upwards to be expert shots. The Sonthals, Kols, Mundas, Uraons and Bhumijs are specially expert.

Archery is the art of shooting with the bow and arrow. This art either as a means of offence in war or of subsistence and amusement in time of peace may be traced in the history of every nation.

Amongst the natives the arrow is now chiefly used to go after big game, and is then, so far as one can learn, anointed with the same poisonous substances that are prepared for human quarry.

The bow used in this district is about four feet long and is made from a flat piece of a special kind of bamboo, whilst the string consists of a thin slice of bamboo requiring special care in its preparation and is adjusted to the bow by means of cordage at both ends.

The arrow is made from a kind of grass, locally known as *Sar* (*Saccharum Arundinaceum*), it varies in length, the usual length used is 28 to 30 inches long, but sometimes shorter ones 26 to 28 inches long are employed if the bow is tight, then a short arrow is put in, but if loose, a long one is used. The various types of head employed are shown in the accompanying diagram, these are usually about 3 inches long and are made from iron procured locally. A few have two feathers tied towards the end of the shaft in order to give the arrow a flatter trajectory. The direction and intensity of the wind seriously affects the aim of the archer. Except in a calm or in a very moderate wind the best marksman cannot shoot straight and when the wind is very boisterous, especially if it either be opposite or a side wind, it is impracticable to shoot far. The arrows are usually very neatly made and much care is taken in their manufacture, the majority of those employed in the chase and for the purpose of killing human being are not winged and this is explained by the fact that the arrow is not meant to kill but is simply a poison carrier, consequently they are generally fired at close range, though there are instances of people being hit at ranges varying from 150 to 250 yards.

The diagram depicts the various types of head in use in the district and the chief purpose for which each is employed will be indicated —

(1) This head is used for killing birds and small game.

(2) This variety goes the straightest and furthest and is therefore used to slay big game warfare.

(3) This variety is used for war, the object of the projection is that after entrance into the body the arrow cannot easily be pulled out.

(4) Is used as (2), but at closer range and flies very straight.

(5) This is a war head and is commonly used in the district for the purpose of murder, it does not produce a large wound.

(6) and (7) These heads are by far the ones in most common use in the district and vary in length and shape, they are used for killing tiger, panther, deer, &c., and are the chief variety used for the purpose of murder. They are mostly used at short range and produce a good sized wound.

The following are the chief methods of poisoning the arrow head —

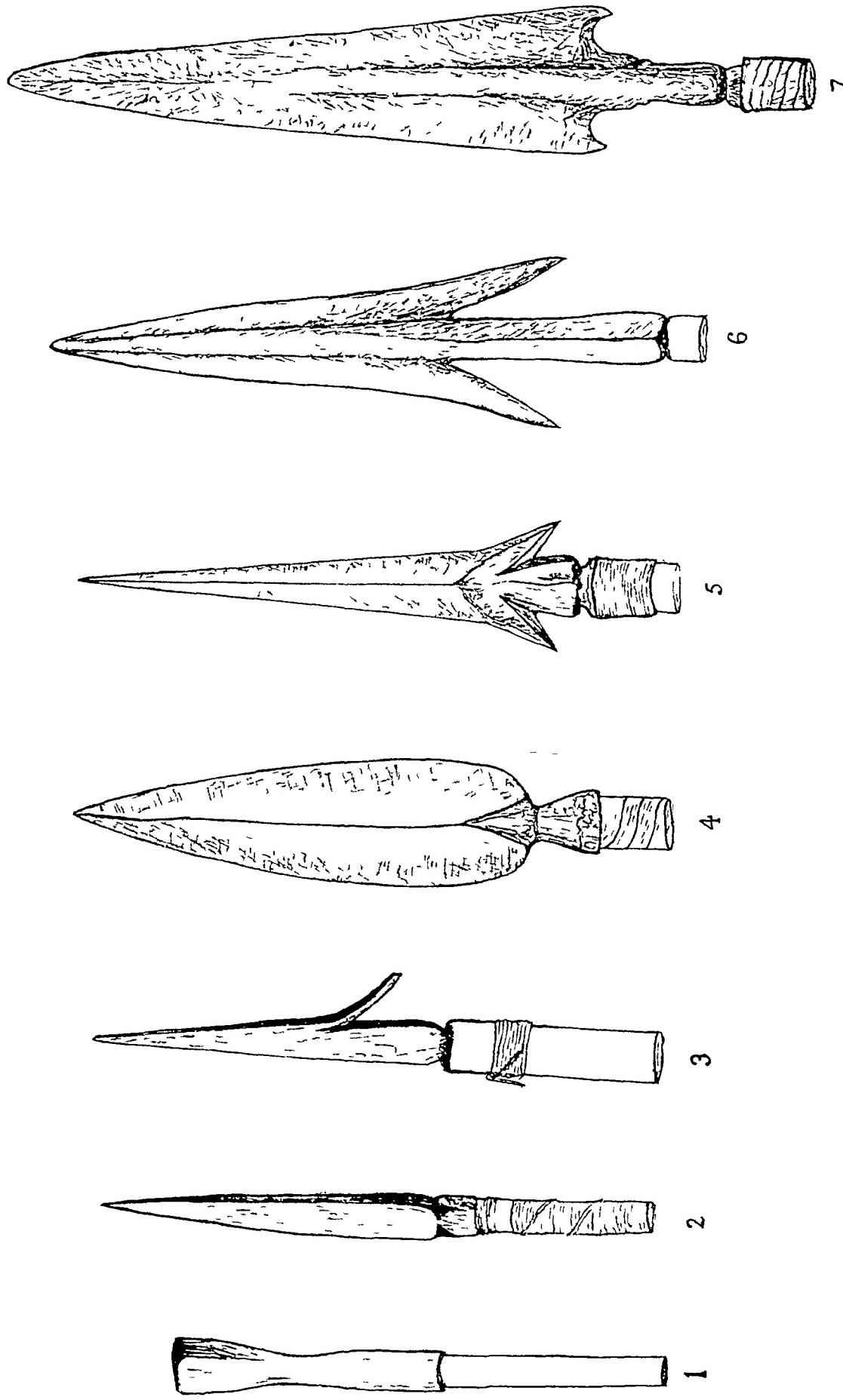
(1) By placing the tip of the head into rotten fish or meat or into the flesh of a much decomposed human body.

(2) By smearing the head with a mixture of raw vomica (Beng — kechela) and Sulphide of arsenic (Beng — harital).

(3) By smearing the tip and edges with snake venom or painting the whole head with the venom.

ARROWS AND ARROW WOUNDS IN MANBHUM

By MAJOR S. ANDERSON, V.B., I.M.S., D.I.M. & H. (C.M.b.),
Civil Surgeon, Manbhumi



TYPES OF ARROW HEADS USED IN MANBHUM

(4) By placing the head into animal secretions in a state of decomposition or smearing the tip with tiger's blood, if obtainable

(5) Certain tribes simply did the head into mud, whilst the arrows themselves are frequently laid on the ground and are almost certain to infect a wound produced by them with tetanus, a disease which is exceedingly common in tropical countries

The following are notes of cases admitted to the Charitable Dispensary at Puriula —

Case 1 — Dinoor Ghosh, Hindu male, aged 58, of village Tintori, Bagmundi, cultivator, was admitted to hospital on the 27th August 1908, 36 hours after receiving an arrow wound. The arrow penetrated completely through the left thigh passing through all the soft structures behind the bone in a slanting direction some $\frac{1}{2}$ inches above the knee joint on its outer aspect. The arrow was immediately removed and was probably a poisoned one. The wound was swabbed freely with mercuric iodide in spirit lotion and afterwards with pure carbolic acid. His general health was bad, and he developed on the leg below the site of injury several small blebs, bullae like containing serous fluid, from which the micrococcus tetragenus was obtained. On the 5th October the foot and lower leg became gangrenous necessitating amputation through the upper third of the thigh, from which he rallied well. There was almost no rise of temperature after operation, but he resolutely refused to take food and died of voluntary starvation on the 29th November. It would appear that he became very discouraged as his enemy had not been punished by hanging as he had expected.

Case 2 — Govinda, Hindu male aged 35, was admitted to hospital on the morning of the 13th August 1909, some 14 hours after the injury.

On examination an arrow was seen to be protruding from the abdomen in the right hypochondriac region, there was some discharge at the point of entrance, which had a distinctly faecal odour, probably due to the presence of the bacillus coli communis.

After the usual surgical preparation the abdomen was opened by extending the wound upwards and downwards. All bleeding points having been secured and the edges of the wound retracted, the arrow head was felt in the hollow viscera of the stomach, entering it about $\frac{1}{2}$ inches above the pylorus and nearer to the great curvature. The stomach was brought out into the external wound and completely separated off from the surrounding viscera with gauze. The wound in the stomach wall was enlarged sufficiently to remove the arrow head and a careful search of the stomach was made for further injury. No other damage was ascertained, and so the wound in the stomach wall was freshened and sutured with fine silk and with a second row of Czerny-Lambert sutures and a purse string at either end. All the exposed viscera were lightly cleaned with sterile gauze and the stomach returned. The abdominal wall was closed in layers whilst the skin and subcutaneous tissue were left open and the wound healed well, only a small pocket abscess persisting, which ultimately healed, and he left hospital on the 12th September.

Case 3 — Bhupati Bhusan Mukerjee, Hindu male, aged 25 years, was admitted to hospital on the 10th August 1909, 15 hours after the receipt of a wound produced by an arrow.

The arrow entered the skin $\frac{1}{2}$ inches above and to the left of the left nipple passing upwards inwards and a little backwards beneath the pectoral muscles, and passing beneath the clavicle pierced that bone about $\frac{1}{2}$ inches outside the left sternoclavicular joint. The whole of the metallic portion of the arrow was embedded in the muscles and subcutaneous tissue.

The arrow was removed without incising the skin, but with the assistance of two directors the groove of the directors being placed on either side over the tips

of the barbs, the whole were removed together. The wound was swabbed with mercuric iodide in spirit lotion, then carbolic acid was applied along its length and after washing with boric lotion, the wound was dried and a piece of gauze introduced.

The patient was discharged well on the 18th September.

Case 4 — Hari Singh, Hindu male, aged 28 years, of village Nandia, was admitted to hospital on the 8th October 1909, with an arrow, protruding from the inner aspect of the left thigh above the knee joint.

The arrow entered the limb about an inch above the knee joint and passing upwards backwards and outwards, almost the whole of the metallic portion of the arrow was embedded in the soft structures, only about half an inch being seen outside. The arrow was removed and proved to be a barbed one, similar to No 7 in the diagram. The wound was dressed as in Case 3 and healed well.

Case 5 — Debi Singh, Hindu male, aged 55 years, was admitted also on the 8th October 1909.

There was a wound 1 inch long about $\frac{1}{2}$ of an inch wide, and $\frac{1}{2}$ of an inch deep situated 2 inches above the lower angle of the left scapula and directed upwards and inwards. This was said to have been produced by an arrow the head of which was barbed.

The wound which was superficial was dressed as case 3, and healed easily.

Case 6 — Gooloo Mohati, Hindu male, aged 55 years, of village Mobonoo, was admitted on the 9th October 1909, for an arrow wound of the right upper arm.

The head pierced the skin and deltoid muscle and being of the shape No 4 in the diagram, it was easily removed by the patient himself. The wound was situated about 5 inches below the claviculo acromial articulation and was directed from before backwards and upwards to a depth of $1\frac{1}{2}$ inches, it was dressed similarly to that of case 3 and the wound healed in 4 days time.

Case 7 — Thakur Das Baistab, Hindu male, aged 28 years, of village Babua, was admitted on 14th October 1909.

There was an incised wound about $1\frac{1}{2}$ inches long and about $1\frac{1}{2}$ an inch wide and skin deep over the middle of the front and inner aspect of the right thigh, the wound was said to have been caused by an arrow. He was discharged cured on the 21st October.

Case 8 — Kanka Teli, Hindu male, aged 31 years, of village Choroda, was admitted on the 12th May 1910, with a penetrating wound of the abdomen. The wound was situated in the left hypochondriac region just below the costal margin, it was 1 inch long and $\frac{1}{2}$ of an inch wide and penetrated directly into the abdominal cavity.

The abdomen was opened and it was found that an arrow head similar to No 6 in the diagram, had perforated the stomach walls and right through the splenic flexure of the colon, the case was a hopeless one and the man died of septic peritonitis the following day.

Case 9 — Sikhar Bhumi, Hindu male, aged 60, was admitted on the 22nd July 1910 for arrow wound.

The wound of entrance was situated on the outer aspect of the upper third of the right thigh and was $\frac{1}{2}$ of an inch long and $\frac{1}{2}$ of an inch wide, its direction was from without inwards beneath the muscles in front on the femur, the exit wound $\frac{1}{2}$ an inch long and $\frac{1}{2}$ of an inch wide was situated on the upper and inner aspect of the leg. An abscess developed in the track, which was washed free of pus and the man was discharged well on the 1st October.

Case 10 — Dukhu Bhumi, Hindu male, aged 30, was also admitted on the 22nd July 1910 for an arrow wound. The wound of entrance, $\frac{1}{2}$ of an inch long and $\frac{1}{2}$ of an inch wide was situated on the upper and back part of the left leg and passing outwards and forwards through the muscles produced a wound $\frac{1}{2}$ an inch long $\frac{1}{2}$ of an inch wide on the upper and outer aspect of the leg. The wound healed well after the usual treatment and he went out of hospital on the 31st August.

specific name written with a small one, thus *Ankylostomum duodenale* and *Ankylostomum caninum* are two species of the genus *Ankylostomum*.

In each genus one species should be put aside, as the type species, and under no conditions can the type species be removed from the genus of which it is the type. Suppose however that a modern and critical examination of the different species which at any particular time constitute an existing genus shows that they are in reality so different that it is obviously wrong to class them together in one genus, then two or more genera must be made out of the old single genus and the old generic name will remain with that section which contains the type species, new names being made for the new genera. At the same time the specific names remain unaltered. The species *waltoni* remains *waltoni* and can be recognised as such whether the generic name is *Amphistoma*, *chladorchis* or *waltoni* as its alliterative name shows, in accordance with a useful modern usage, it is now the type species of the genus *waltoni* and can never emerge therefrom to annoy a reviewer.

A notable example of the splitting up of a genus is that of the genus *Tania*, originally enormous and full of forms of varying kinds it has suffered amputation after amputation, till in recent times it has, excluding the hydatid tapeworm, been reduced to a collection of two groups of worms, one with hooks on the testulum and one with the testulum unarmed. The type species of the genus being the armed *Tania solum*, the generic name, on the splitting up of the genus, remains with the armed portion, and the unarmed portion has been constituted a new genus *Tania rhynchus*.

Changes of this kind cannot be avoided, nor are they ones in which a medical man, as such, has any legitimate claim to be heard, for human helminths form an infinitesimal proportion of helminths as a whole, and changes in the grouping of the former have to be made according to their structure and not as a matter of medical convenience and a change in genus necessitates a change in name. It is especially in a large and indeterminate genus such as *Tanaria*, that these changes are to be expected. They are an indication of accurate modern work, and make for ultimate utility, though in immediate effect puzzling to medical men, who however should be the last to object to changes in the result of increased knowledge of parasites.

One of the most important of the articles of the Code of nomenclature is "The Law of Priority," which means that the first name given to a species remains always its specific name. This sounds easy and final. It implies, however, a full knowledge of the literature of the species, and if this is imperfect, subsequent changes of name may be entailed. Suppose for example that it has been taken for granted that a particular animal was first described and named in 1801, the name then given will be accepted as its true name. If, however, some indolentious individual finds out that as a matter of fact it was described and named in 1755, then the name given in 1801 is suppressed and cannot be used again for this or for any other animal and the name given in 1755 is the approved name of the animal. During the few years which have elapsed since the International Code has been adopted, it has had the effect of producing in this way many changes of accepted names and it will continue to do so, but ultimately finality will be reached and changes from this cause will cease.

By another rule no two genera in the animal kingdom may have the same name, and by another all names are latinised. The Code published in the Bulletin referred to above has an appendix dealing in detail with the transliteration and Latinising of Greek words. It may be useful, as illustrating the above remarks, to point out some of the changes which have occurred in the nomenclature of human helminths and the way in which they have been brought about under the Code.

Iularia sanguinans hominis is trinomial and disappears in favour of *Iularia haemorrhoidalis* given by Cobbold in 1877.

The huge indeterminate genus *Iularia* has recently had two genera cut off from it, and will doubtless suffer further amputation. *Iularia loa* has become *Loa loa*, and *Iularia volvulus* has become *Oncocerca volvulus*.

Uncinaria has, as a genus, been found incapable of definition. *Ankylostomum* and *Necator* are two genera which have been cut off from it.

Ascaris canis has been decided to belong to a different genus from that containing *ascaris lumbricoides*, and a new genus *Toxascaris* has been formed to contain it.

The genus *oxyuris* has had to be split up. Unfortunately for medical men, the type species and the human species pass into different genera, and that containing the latter has been named *oxyuris*.

A more complicated case of alteration is that of *strongylus subtilis*. So far as human beings go it was first described by Looss in Egypt under this name. Later he removed it and other species into a new genus *Trichostomylus*, among the other species being one *Trichostomylus instabilis* described earlier by Rülliet from sheep. Looss considered the two forms mentioned to be distinct, judging by the information he obtained about *T. instabilis*, but later he was able to make in

actual examination of the individuals from which the species *instabilis* was named and was convinced that his and Rülliet's species were identical, though *subtilis* was suppressed and the correct name of the worm is *Trichostomylus instabilis*. The name *Trichina* having been already applied to another genus in the animal kingdom before Owen applied it to *Trichina spiralis* has had to be dropped, and has been replaced by *Trichanella*.

These examples of change in name of human helminths may serve to show that such alterations are now ordered on definite lines and governed a code designed to secure stability by and conformity as opposed to erratic individual whim, that the ultimate effect of the Code will be to ensure that change in nomenclature will only take place as the result of change in classification, and that change in Zoological classification now is to a considerable extent necessitated by imperfect or incorrect examination and description in the past, the name for which, if blame there be, is to be laid upon those who put varying forms into a single genus, and not upon those who laboriously sort them out again.

My indebtedness to Dr Leiper of the London School of Tropical Medicine in respect to this question of nomenclature is a large one, and one which I gladly and fully acknowledge.

LONDON, } CLAYTON LANE, M.D. (LOND.),
May, 1911 } MAJOR, I.M.S.

ORGANISMS IN DYSENTERY STOOLS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the April number of the *Indian Medical Gazette* pgs 130, Captain Gillett states that in the stools of 70 cases of dysentery "ciliates were found in four cases and Balantidium coli once."

In Port Blair in 1905, the stools of 920 cases, out of a total of 2,359 of dysentery, were examined microscopically. Flagellates were found in 723 of the cases. Balantidium in combination with Amoeba or flagellates or alone in 7 cases. In one stool a ciliate, other than Balantidium, and introduced in the ablation water, was found.

Possibly Captain Gillett would furnish a description of the ciliates, other than Balantidium, he discovered. He would thereby be increasing our systematic and zoological knowledge. The Trichomonas intestinalis of Leuchat was described as furnished with a number of cilia which Blanchard (*Traité de Zool. Médical*) unhesitatingly resumes to be an optical illusion produced by the moving of the undulating membrane. Such an error is very easily committed by anyone working with a comparatively low power.

Yours, etc.,
A. R. S. ANDERSON, M.B.C.M.S.,
Lt. Col., I.M.S.
Civil Surgeon, Chittagong

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to Colonel Anderson's letter regarding the occurrence of Ciliate bodies in dysenteric stools, I enclose a copy of the notes made on the cases referred to.

In all cases a piece of mucus was teased out on a slide with a little normal saline solution, and was examined under 100 power. I do not think any of the stools had come into contact with ablation water.

As far as I remember Ciliate bodies were found on one or two occasions in Madras in 1907 in stools of apparently healthy persons.

As they probably have no causal relationship to dysentery I have not regarded them as of any consequence.

BOMBAY, } Yours, etc.,
27th May 1911 } W. GILLETT, M.B.,
Captain, I.M.S.
Superintendent, Burdwan Central Jail

COPY OF NOTES ON CASES

1. *Buchu* Mysoreman, 11th August 1909.—Stool watery, reddish in colour containing reddish sloughs and mucus.

(a) Bodies like small mites containing red blood corpuscles, movement straightforward like a worm (●●●), no differentiation of endoplasm and ectoplasm made out.

(b) Flagellates (●) one of which contained a RBC.

(c) Ciliates (●) No ova Cellular exudate.

2. *Shiro Golam* Shir, 22nd August 1909.—Stool loose containing some mucus and blood. No amoebae. Several ciliates (●) Ova of ankylostomum duodenale and thread worm. No cellular exudate.

factor in the case. The proverbial fatalism of the native as regards wounds should also be taken into account in the prognosis.

Where a wound is produced by a poisoned arrow, such wounds should always be pronounced as "dangerous," no matter how slight the injury may appear or the part of the body struck. It is also evident from the above cases that injuries severing the larger vessels, or passing through serous membranes, or penetrating a vital organ are of more serious import than those passing through the muscles of the limbs on account of their attendant complications.

It will be easily understood also that the closer an arrow is fired, the greater will be the degree of penetration and the resulting wounds will be proportionately serious. Fatal haemorrhage may occur from the wounding of a deep artery or the viscera or internal organs may be so lacerated, that death is only a matter of time.

It is remarkable the tolerance which the body discloses to the entrance of a foreign body, such as an arrow head, I removed an arrow head from the body of Gauhan Saudagar, which to my knowledge was over a month in the peritoneal cavity.

The factor of the time at which a person comes under treatment after the receipt of the injury is also very important, the treatment of a wound which has been caused by a poisonous arrow must be prompt, if the patient is to have any chance of recovery. In any case it may be taken as an axiom, that no surgically clean arrow ever leaves the bowstring and considering the number of poisoned arrows employed, the sooner the arrow is removed, the better. Delay is dangerous where arrow wounds are concerned, and it has been observed that the deeper an arrow wound is, the greater are the toxic effects. It can be readily understood that the deeper the head is, the greater the absorption and the longer it is likely to remain since remedial measures are more difficult to adopt where the wound is deep.

As might be expected, the symptoms accompanying an arrow wound vary, depending on whether the arrow is poisoned or not, and the nature of the poison. From the cases described it will be noted that simple wounds of the skin and subcutaneous tissue heal well when treated in a proper surgical manner.

From a description of the cases and the *post-mortem* reports, it may be concluded that the serious cases show a varying degree of severity and varying symptoms.

The first type of case is that in which death quickly overtakes the person struck, either from heart failure or internal haemorrhage, the symptoms are those of collapse, with a slow and thready pulse, and dilated pupils showing no reaction and are thus easily recognised.

The second type of case is that in which some complication sets in some hours or days afterwards, many of the cases become septic and some become attacked with erysipelas or a true cellulitis. Edema or in old people gangrene, speedily brings a fatal termination.

The third type of case is that in which spasms occur either due to tetanus or strychnine poisoning, the trismus, the tonic spasms, and late appearance of the symptoms point to tetanus.

The after-treatment of slight cases resolves itself into a general tonic line, with careful cleansing and dressing of the wound. If the case has come in with the arrow still *in situ*, it is necessary in all cases to remove it, even where the case is hopeless. Where the arrow has become transfixed in a limb or in the body, it should have the shaft cut off about 6 inches from the body surface. In a limb, it is often better to push the barb through to the other side and then cut off the head when the shaft will be easily removed.

Where the arrow head is a barbed one, and is just beneath the skin and surface muscles, the method adopted in case 3 may be employed. This consists in placing a director with a fairly large groove over each of the barbs, through the incision already present, when after a little manipulation, the whole may be removed together, or the arrow head may be slid along the grooves of the directors and gently pulled out.

Where there is obvious puncture of a large artery or its branches, it should be ligatured high up so as to prevent secondary haemorrhage.

Where there are signs of erysipelas or cellulitis, the limb should be placed in a warm cylin bath or be washed continuously from an irrigation apparatus with the solution. Where the cellulitis is pronounced, free and early incisions are necessary. In all such cases a free purge of grs 5 of calomel combined with grs 10 of soda bикаb should be administered followed by a saline Quinine grs 10 along with tinct ferri perchlori ms 20 should be given three times a day. The patient's strength should also be conserved by giving a light nourishing diet, such as milk, soup, essence of chicken, etc. A stimulant also is necessary, and therefore 2 to 4 ovs of brandy may be given daily. Anti-streptococcus serum should be injected early in these cases, two injections of 10 c.c.'s each on the first day or two, followed by an injection of 10 c.c.'s daily until improvement sets in.

In cases of haemorrhage transfusion may be necessary, whilst in cases of heart poisoning, a hypodermic injection of a thirtieth of a grain of strychnine combined with a hundredth of a grain of digitaline, may be repeated every hour for three or four doses.

Cases of strychnine poisoning should be treated with the ordinary antidotes, and in cases where

tetanus is likely to set in early injections of anti-tetanic serum should be administered.

In the French Colonies the surgeons employ tannic acid in the treatment of arrow wounds where possible a ligature is placed above the wound, which is then cleansed and brushed with pure carbolic. The ligature is then removed and bleeding encouraged, tannic acid is then packed into the wound and a dressing employed. I have had no experience of its use but mean to employ it in future, as it possibly acts by producing an inert compound and condenses or "tans" the albuminous and connective tissues constituting the local blood vessels and is therefore a powerful indirect styptic and constrictant.

THE HEALTH OF A BENGAL DISTRICT

By H. SEN, M.B.

The health of a district in a province may be taken to be an index of the health of the whole province. Lately, I got an opportunity of visiting Purnea. Short as my stay was, I made the best use, I possibly could, of my opportunities in studying the topographical and sanitary aspects of the district, the habits and manners of the people, their life and health, and the medical works so far instituted, therein. The district is situated in the sub-tropical region, occupying a portion of the Eastern Gangetic plain and bordering on the sub-montane tract of the Himalayas. It is an uniform plain, very gently sloping from the north towards the south and partially from the north east to the south west. It is bounded on the north by the densely wooded Nepal Terai, on the south, by the Ganges and on the east and west by two of its tributaries. The soil is sandy with layers of clay deep down. It is watered by innumerable streams which bring down the washings of the southern slopes of the Himalayas, which are extremely fitful in their course ever changing their shallow beds, leaving enormous tracts of sand and extensive swamps especially towards the eastern half of the district. On both sides of the Mahananda which forms its eastern boundary there are innumerable deep swamps some of which never dry up even in the summer, the sub-soil water here is always high, it easily gets water-logged during the rains when it looks like one sheet of water with the villages half submerged. Only wet crops are grown here, namely, jute and paddy. Towards the west and the south, the tracts, bordering on the Ganges and the Kusi, rise to a higher level than the low lying tracts towards the east, they are more sandy and dry, and the sub-soil water is lower in level. There are no particular swamps except where a dying river is seen coursing about. The soil is not fertile and water logged enough to grow such wet crops as paddy and jute. It forms, however, a fine pasture land, where cattle from the neighbouring districts are led to graze. The extensive plains are dotted over here and there especially, where the villages stand with tops of mango, jack and other fruit trees and thickets of fine feathery bamboos. There are no big forest trees but there are bushes and undergrowths at different places. The eastern part of the district looks extremely pretty with its waving fields of rice and jute, its mango tops and bamboo thickets, from among which peep out neatly built thatched huts. The pasture lands towards the west have a beauty of their own, wide, open and cheerful, with but few big trees here and there. From the north, the view of the dense forests along the Terai, so leafy, so green and the misty mountains further away is extremely charming,

but behind the charm lies hidden a deadly poison. At the extreme south the country looks like a piece of desert, very dry and very hot. The climate of the district is comparatively mild, the mean temperature is 62° F. in March 75° and in May 85°. The lowest mean minimum is 48° in January, the highest mean maximum is 95° in April. It has its extremes too. In 1909 it was 38° in winter, and 116° in summer. The winter is usually cold, the summer is seldom so hot. Its average rainfall is 71 inches, in January 13°, July 17°, the wettest month, August 15° and September 13°, the two rainy months. Through the greater part of the year, the wind blows from the East. It makes the atmosphere damp but makes it pretty cool and comfortable. When it stops, however, and at the least exertion one breaks out into profuse perspiration. The air is humid. It never blows hot and dry. The population, in round number, is 18 lakhs of which ten lakhs are Hindus, and eight lakhs are Mahomedans. The majority of the people belong to the cultivating class. There are a few traders and merchants who do business in jute and rice chiefly. The district possesses an area of five thousand square miles, the population per square mile being below 400, comparatively a very thin population. The total revenue of the districts is twenty two lakhs, eleven lakhs being realised from the land. There are three Sub Divisions of which the one occupying the North and Eastern part—the Kissengunge is the most swampy, most wet, and water-logged and the best productive part of the district. It is densely populated and most unhealthy.

The district has a beauty and charm of its own but it is the deadliest district in Bengal and for the matter of that perhaps in India. I have known Jessore, it is the valley of death. There is no name by which to call Purnea, perhaps one may call it the very bottom of the valley of death.

I visited the Thakurgunge Hit on the 6th and examined 318 persons—men, women and children—Hindus, Mahomedans and Rajbansis, indiscriminately and I found that 311 of them were deeply affected with malaria—one had simple anaemia, 54 were pigmented, 133 had the spleen and 123 had both the spleen and pigmentation. Only 7 possessed what may be called health and close to cent per cent of the people were diseased. In the Panjpara Hit, I examined 169, except 3 all were saturated with malaria—104 had the spleen, 34 were pigmented, 26 were bloodless only—2 had the fever on them at the time. Here too cent per cent was in the grip of the disease. In Poschim Dhantola—a village I found 27 out of 31 children examined had the spleen—or a percentage of about 90. In the same village out of 27 adult male 21 had the spleen—4 were pigmented, 1 had kidney affection and 1 cholera. Here the rate was 93%. At Bahadurgunge out of 142 examined in the Hit 124 were affected—a percentage of 90 nearly. At Kissengunge, 80% were affected. Out of 635, 215 had the spleen—263 had the spleen and bore also marks of pigmentation—27 were anaemic and 130 were unaffected. Compared with the others Kissengunge had better health. I visited other villages and everywhere I met with the same thing. As to the sanitary features of this part of the District—it may be said that the whole northern tract is one limitless swamp—the work of an ever-shifting river—giving only wet crops as rice and jute and where levelling the surface and draining the same can only mean destruction of the crops. The people live in lowly built huts surrounded by rice and paddy fields. They are ill clad and ill protected.

I examined the children of the Islampore Upper Primary School and I found out of 39 boys and girls present 18 had the spleen and the rest were pale and anaemic showing that they too had imbibed the poison.

I found, however, a different state of things in the Sub Jail at Kissengunge—a state of things akin to what I had noticed in the Sadaq Jail. Here the health of the prisoners looked comparatively better than that of the free people. Out of 42 prisoners

in the Kissengunge Sub Jail—4 had the spleen and 29 bore marks of former infection. The majority of the prisoners had fair health. In the Sadar Jail out of 294 prisoners 49 had the spleen, 215 bore marks of previous infections and 30 had fairly good health. There are among the free people hardly 10 in a hundred who possessed what may be called health among the inmates of the Jail the number was larger. Whence this difference? Jail life to a great extent conduces to health as life under discipline everywhere does. Jail life is an object lesson to a student of health.

While I was moving away the people examining them and asking about their health, the one thing that impressed me was the eagerness with which they sought for relief and help. In one word I came to learn they went without any treatment whatever. Then I saw how widespread the disease was—what havoc it has caused and is still causing—it struck me as if the task of giving them immediate relief was next to impossible. Within half an hour I treated 41 patients while at Illuabari and then I had no more medicine in stock to give. In Poschim Dhantola where 11 persons had died of cholera within 3 weeks, I found the people in a state of panic deserting their houses—leaving all soiled clothing stacked in the compound. People won't dare to enter a hut where a person had died. I went in—washed and disinfected the hut, had the soiled articles burnt before me—and disinfected a well. Far from resisting or shewing any disinclination whatever, after they had got over their feeling of stupefaction and panic, they came with their buckets for the disinfecting fluid, volunteered to disinfect their own houses and asked for medicines, which the Police had, I was told, but were never given to them.

Such is the state of affairs in this part of the district which I have been able to visit.

As to the dispensaries, I found the work of the Kissengunge Dispensary suffering badly for want of a compounder, a dresser and a whole time cook. At Bhadoorunge the dispensary was kept closed for four days, for the medical officer had an attack of fever. At Shikurgunge, the most badly affected tract, the number of patients averaged only 30 a day. Then I went there to inspect, a large crowd came in. There were cases of fever, spleen of big abscess, tumour, ulcer, in fact all manner of cases. The hospital got so overcrowded that the medical officer could not cope with the work. There was no compounder, nor a dresser. He has got to prescribe—to compound and to dress. How could he possibly carry on these multifarious duties and treat a large number of patients?

This is the sort of treatment they get in the dispensaries. They are practically quite useless and are never likely to be useful and popular as at present constituted and kept.

As to the vital statistics, their collection and classification I learnt while there is an outbreak of an epidemic disease in a village, the chowkidar—instead of going in and ascertaining the number attacked and died, they themselves get into a panic and make themselves scarce. They collect the figures from outside the village, take the number what the people are pleased to give, which they never volunteer to do and as for the cause of death put down invariably "Fever."

In the collection of the statistics many cases of death are omitted, and in the classifications of deaths outrageous mistakes are committed. In the Khazinchihat thana I found from the register 100 deaths were reported during the last 5 months. Of these 94 were shewn under "Fever" and only 6 from all other causes. At Baigna, a village, I examined the chowkidar's "Hathchita" or "book of death" and I found of 21 shewn as death from "Fever"—8 had died of age and senility and 13 from kidney diseases, etc. There was not one case of death actually from "Fever". In another village of 23 deaths reported, 17 were shewn

under "Fever" which, I found on verification, were due to such affections as dysentery, cholera, etc. I got the chowkidar and villagers together—put questions to them and so elicited the truth. The South Central and South Western part of the district are comparatively healthier than the rest of the district. It is a sandy place bordering on the Ganges and the Kosi where the soil is not suitable for the purpose and so paddy and jute are not grown there. On examining the health of the people in this Hat at Khazinchihat, I found out of 111 only, 13 had the spleen and 7 bore marks of malarial pigmentation. The spleen rate was only 11.71%. Fever here is very much less than elsewhere. So to say that 96% of the death here was due to fever is but pure falsehood. Even in the North-Eastern part of the District where malaria is intensely bad were cent percent of the people are deeply saturated with the poison, death from fever does not appear to be specially high for here I have seen men with spleen, 70 years old, who contracted the disease probably at the age of one. Malaria does not generally kill outright but like a cat it knocks its victim down and plays with it till it expires or as it very often happens—leaves it half dead to be carried away by some other malady.

What can be done to improve matters? As far as malaria and cholera are concerned—the two principal diseases which are causing so much sickness and mortality in the district one is tempted to take his lessons from jail life. Even in the most unhealthy district a jail is specially free from these two diseases. This is because the people there live under discipline—are better housed—better clad—better fed and in every way better looked after. Among the ignorant and uneducated people discipline is a thing which is unknown. They dwell in the midst of marshes, live in low damp huts, go almost entirely naked, eat only sig and rice with a pinch of salt and are seldom visited by a medical man when they are ill. If it was practicable and possible one would suggest the stopping of all wet cultivations throughout the district, but this cannot be done. A great economical problem is involved in it. The best thing that can be done under the circumstances is to settle each bustee on a selected site which should be on a higher level than the surrounding land. It should be well leveled and made like the back of a tortoise so as to permit of natural drainage and strict order should be passed prohibiting all wet cultivation, within an area at least half a mile in radius. People should be instructed to build their huts on an approved model plan in ordered rows or circles. In the Central Province reward was offered to a person who built and lived in such a model house. There should be a well or wells in each bustee specially constructed and kept strictly reserved and regularly disinfected and cleaned for the use of the people. There should be public burial and cremation grounds properly demarcated and enclosed and people should not be allowed to bury or burn the dead wherever they like. Enclosed field latrines should be provided for each bustee. They should be trenched up and brought under cultivation when used up—new ones being made as required. As to their daily life, ignorant as they are, innocent of the simple elements of hygiene. They eat, they drink, whatever they like, they sleep wherever and however they please, they clothe selves with the scantiest garments I have seen them working in the field stark naked with just a strip of dirty rag covering their private parts and entirely bare headed. They bathe but seldom, get water to wash and clean their clothes.

If the women do put a cloth on to cover their nakedness, it is so thick with dirt as to her positively injurious to their health. Far better to go about naked than to keep a rag of dirt on. The only remedy there is to bring them to light by education so that they may see what is good and what is bad for them, and so adopt the one and avoid the other. But much, if not all, depends upon the economical condition of the people. A well housed, well clad, well fed man will have a constitution

that can resist and stand many a shock which will shatter another's not so well circumstanced. Their resisting power is nil. Their physical growth and development is far below the standard. There is now one Afghan in the jail. He is 5' 8 $\frac{1}{2}$ " weighing 165 lbs. There is one Mohamedan 5' 8 $\frac{1}{2}$ " weighing only 133 lbs and a Hindu of the same height weighing only 123 lbs. What a vast difference!—how significant!

As it would appear from the foregoing the medical needs of the district are great. More dispensaries should be opened in the Northern and Eastern part of the district which are thickly populated and most malacious. The Kissengunge Sub Division alone contains 6 lakhs of population but there are only 3 dispensaries. But before new ones are opened the existing ones should be so constituted as to be of real use and help to the people. At present they can hardly be called useful in any sense. What small number of patients they do treat now are mere minor ailments as spleen diseases, etc. The great mass of sickness is left quite untouched.

The importance of Thakurgungo appears to be so great that one would feel inclined to suggest the appointment there of an officer with higher qualification than that of a Sub Assistant Surgeon. He will not only have to treat cases out door and in door, he shall have also to keep a well fitted laboratory to study and investigate the real nature of the diseases, and devise means how better to prevent than to cure. It is neither practicable nor possible to treat with any hope of success illness which are too widespread and too deep rooted to be cast out by any known means. They would defy all drugs chronic as they are. The treatment of acute cases only holds out any hope of success.

To better the conditions of the dispensaries and to make them really useful and popular is a question of finance. And if the funds of the District Board are not enough Government may be approached for financial aid. The case of a District like Purnea is a special one and special consideration may be expected from the Government. All the medical officers in charge of the Mofussil Hospitals should be Government men on graded pay and should be given special allowance by the District Board. No officer so underpaid as the District Board officers are and so handicapped as they are—without a compounder, without a dresser would take any real interest in his work.

As regards the collection and classification of vital statistics, to get at the real figures and facts, medical man should be employed as Registrar or an Inspector of Registration going from village to village enlightening the people on the matter of registration and checking every Hatchitta of birth and death. On chowkidar parado day he should give a few lessons to the assembled chowkidar as how to collect facts and figures. Every village "Ponch" should be held responsible for correct registration of birth and of the causes of death.

But here again comes forcibly the question of education—without it a Ponch would make as egregious a mistake as a chowkidar. The Registration of Births and Deaths is a matter of vital importance. It had hitherto been much neglected. It should no longer be left in the hands of an illiterate chowkidar nor of a literate constable either.

During the last two years, I have seen enough cases of round worms to convince me that there is a febrile condition—associated with the presence of Ascaris in the intestines—often closely resembling the typhoid state. The most striking feature in these cases is the almost immediate subsidence of the fever and relief of other symptoms on the exhibition of an anthelmintic. The mode of production of the fever is one of the most interesting questions in connection with the condition. The actual numbers of worms present seem to have no definite influence on the severity of the fever. One case will pass 25 or 30 worms, these having been no fever previously, while another with severe pyrexia passes no more than a dozen worms all-told. In these pyrexial cases I have been struck with the number of female worms passed. Out of a dozen worms passed an average of ten would be females. So far as I could make out on ordinary dissection, the worms appeared to be healthy. The occurrence of a preponderance of female worms in these cases may have been coincidence, or is it possible that with the ripe ova there is also expressed some excretion or secretion, the collective effect of which (occurring contemporaneously in a number of females) is an absorption to produce disturbance of the thermogenic centres. That the Ascaris even when it produces no febrile disturbance may be no passive resident in the intestine is shown by the fact of its being able to produce an alteration of the blood constituents in the Eosinophilia often present. The cause of this is probably some excretion or secretion of the worm being absorbed from the intestine and stimulating the leucocyte producing tissue. Whether an artificial Eosinophilia has ever been produced by injection of extracts of the worm or parts of the worm (ovary, e.g.) I do not know, it is likely that the same cause produces both the Eosinophilia and the Fever Disturbance.

Case I—This was the first case that attracted my attention to the fact that the presence of Ascaris could produce an apparently serious condition. This patient was admitted suffering from fever and diarrhoea. He developed a condition that was diagnosed enteric fever—Fever, diarrhoea, enlarged spleen, a trembling tongue, furled on top, red at tip and edges, a dull listless look.

On the ninth day of his admission he suffered from severe abdominal colic and distension, he was given a mixture containing Oil Teibenthal in emulsion. On the morning of the 10th day he passed one round worm. In the evening, Santonin 3 g's was administered. Next morning I was surprised to find the temperature had fallen to 99 and the colic and distension had disappeared. Towards the middle of the day seven worms were passed (no purgative had been given). In the evening the man was quite comfortable,

A Mirror of Hospital Practice.

TWO CASES OF ASCARIASIS

BY A D STEWART,

CAPT., I.M.S.

THE following cases may be of interest as illustrating the state of "Ascariasis" suggested by Colonel Hehir in your June issue

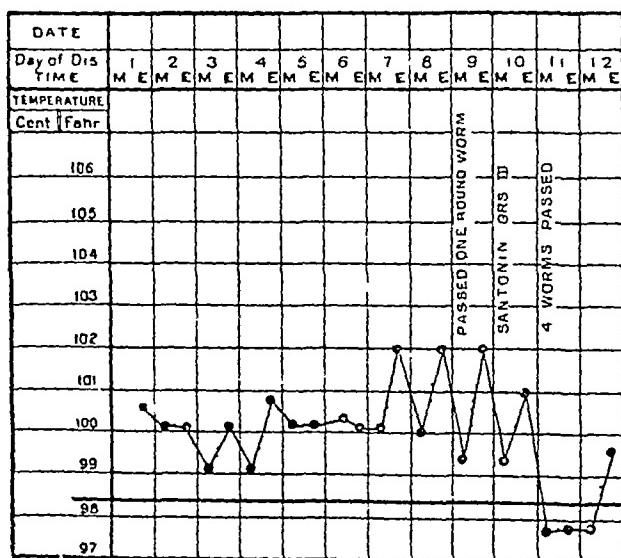
there was no colic or tympanites, his temperature 99.4 and his tongue clean. Next day the temperature was normal with a slight evening rise. On the 14th day he again had some abdominal pain—3 gis Santonin were again given and four worms passed on the evening.

After this recovery was uneventful, no more worms being passed. This man's blood gave a positive Widal Reaction of 1 in 50 and he was diagnosed enteric fever. I should have been more convinced had I been able to cultivate the bacillus from his blood. Unfortunately I had not the apparatus convenient. I have no doubt, however, in the light of other cases I have seen, that though there may have been a specific typhoid inflammation as well, the major part of the condition was due to the presence of the Ascaris and when these were got rid of, the serious condition collapsed.

Case II.—In this case, which came to hospital about the same time as No. I, the condition was discovered earlier. He suffered from fever and diarrhoea on admission, but his spleen was of normal size. His faeces were examined on the 4th day and showed numerous ova. Next day he passed two worms, with severe colic pains. Santonin 3 gis was given in the evening and next morning he passed three worms, his temperature having fallen to 99. On the 7th day he had again colic. Santonin being given in the evening, the result being six worms were expelled next morning. After this, recovery was uneventful.

Cases III and IV.—These were admitted this year and are sufficiently illustrative. Fever and occasional colic attacks were then only symptoms. The condition was recognised in Case III.

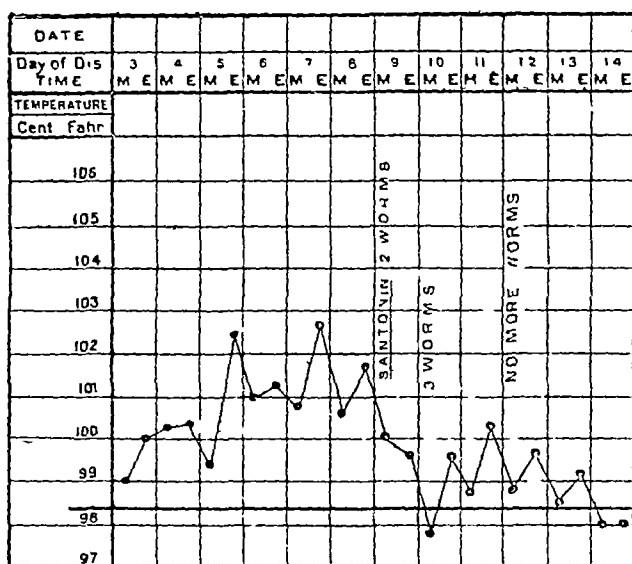
Case III



by his passing a worm on the 9th day, next day Santonin was given, and on the following day four worms were passed and the febrile condition came to an end. In case IV the faeces examined on the eighth day showed numerous ova.

Santonin was given and the fever fell at once, though there was a slight recrudescence for a day or two. There is no doubt that a more timely recognition of the condition would have resulted in its yielding at once to the exhibition.

Case IV



of Santonin. I now make it a rule that every case admitted with fever for which there is no manifest cause, is given a dose of Santonin, the faeces of necessity being at the same time examined.

A CASE OF GENERAL PARALYSIS OF THE INSANE IN A NATIVE OF INDIA

BY P. HEFFERNAN,

CAPT., I.M.S.,

Superintendent, Madras Lunatic Asylum

In common with the inhabitants of Iceland and the rural parts of Sweden, Norway and Ireland, the Native of India has been credited with a complete immunity to general paralysis. This immunity has always been somewhat of a puzzle to the Pathologist, because, whereas in the cases of the European countries mentioned above the absence of G.P.I runs pari passu with the absence of syphilis, in India no such relationship obtains.

Some evidence has, however, been forthcoming of late, which tends to throw some doubt on this supposed immunity. Captain W. S. J. Shaw, I.M.S., of Rangoon Asylum, reports three cases of G.P.I in two years. Of these, one was a Madras Brahmin, and two were Burmans.*

The writer begs to bring forward the notes of a case which died in the Madras Asylum during the present year, and which case, although by no means typical—he believes to have been one of G.P.I.

Case II—E —, a Pariah, said to be aged 50, but looks younger, coachman, was apprehended by the police for theft, and committed to the Lunatic Asylum on May 2nd, 1909. On admission, was unkempt and untidy in appearance, excited and boisterous in demeanour, and rather amusing and jolly in conversation. Very boastful, stated that he drank from Madras measures of arrack daily (about a gallon and a half), that he smoked tobacco and ganja, and that he had a great way with the ladies.

His estimation of his abilities in other directions was on an equally expensive scale. He stated that he had suffered from syphilis in his young days, but no traces of syphilitic disease were apparent. He had transient delusions of an exalted nature.

Physical condition — Nutrition moderate, no gross palsy, knee jerks exaggerated and "floppy." Plantar reflex could not be elicited. Gait normal, neither ataxia nor spasticity. No facial or lingual tremor. Pupils contracted and equal—react very slightly and sluggishly to light—fairly well to accommodation. Consensual reflex absent. Nothing very marked about his articulation. Left humerus had been fractured about the middle, and had united at a slight angle.

Six months afterwards — November, 1909

Physical health now very poor. Knee jerks still exaggerated. Pupils markedly unequal, and light reflex completely lost, although both pupils still react to accommodation. Face smooth and expressionless—flabby and greasy. Articulation indistinct and "slobbery" or blurred.

Mental condition. Still expansion and exalted. Is subject to sudden emotional outbursts from time to time, but is rapidly becoming demented.

On 11th November, 1909, patient found in his single room in hospital, with a fracture dislocation of his left elbow joint. Was now too demented to give an account of how the accident occurred, but it must have been caused by a slip and fall, i.e., very slight violence. Patient laughed loudly while the necessary manipulations for reducing the injury were being carried out. At this time there was a very general anaesthesia due to his demented condition.

Patient developed acute tuberculosis, and died, quite demented on January 20th, 1910.

Post-mortem — Old fracture left humerus. Much thickening and callus, left elbow. A thickening on right humerus, towards upper third. Pleura adherent both sides, and lungs in advanced state of tubercular infection. Several ribs showed evidence of old fractures.

Skull normal thickness, dura mater thickened and tough. Pia-arachnoid opaque. Sub-arachnoid fluid turbid. There appeared to be a good deal of diapedesis from blood vessels into serous fluid, and membranes were stained in places. No clot or false membrane.

Brain shrunken and atrophied. Weighed 38 ozs. Atrophy more marked in right than in left hemisphere. Portions of brain were hardened and sections cut and stained at the Pathological

Laboratory, Madras Medical College, by Capt A C Ingiam, M.S.

The microscopic examination of motor cortex, showed general atrophy of nervous elements, vacuolation of nerve cells with loss of staining reaction in Nissl bodies. There was some endothelial proliferation of the intima of the arterioles, but the most marked feature was a very general small round celled infiltration of the peri-vascular spaces, extending in places some distance into the surrounding nervous tissue.

Unfortunately no facilities exist in Madras for the estimation of the Wasserman reaction.

THE IPECACUANHA TREATMENT IN LIVER ABSCESS

BY E MUIR M.D.,
Mission Hospital, Kalna

I WAS surprised upon reading the discussion of the treatment of hepatitis by ipecac in the September number of the *J. M. G.* to see that nothing definite was said with regard to the effect of ipecac when an abscess has actually formed in the liver.

Now from cases of my own I have not the least doubt that ipecac is also very useful when an abscess has actually occurred.

About two years ago I had a case where there was distinct fluctuation below the ribs and intense pain in the same region.

After giving a dose of 20 grains of pulv ipecac there was so much relief of pain that I determined to persevere with this treatment and delay operation. In three or four days the abscess had very much diminished, and in about a fortnight the liver could hardly be palpated below the ribs.

I unfortunately did not make a puncture, as I did not at the time think it necessary there being no room for doubt as to the presence of abundant pus.

Although three or four years ago we used to have as many as seven or eight liver abscesses in the month on occasions, we have had comparatively few of late. With one exception I have found them yield at once to ipecac. The one exception was in a woman where there was so much bulging in the back and side that I thought it advisable to remove a portion of a rib, and drain the abscess. Several pints of pus were taken out. I, however, kept her under the influence of ipecac both before and after the operation, and found that in consequence the abscess dried up in a remarkably short time, while many similar cases which I had operated on before had died.

About a fortnight ago, however, I had a case which enabled me to absolutely prove the effects of ipecac in curing liver abscess.

Bhusan, aged 18, a Hindu, was admitted having suffered for about eighteen days from a swelling and pain in the right hypochondriac and epigastric regions. On examination the

swelling was found to be due to enlargement of the liver, which felt hard and bulging, and pitted on pressure. There was a slight rise of temperature in the evening, and the leucocyte count was between 35,000 and 40,000.

On exploring with a needle pus was found and four or five drops extracted which on microscopic examination showed numerous amoebæ. A powder containing Pulv Ipecac gis. xx, Acid Tannic grs x, Calomel gr 1 was given twice a day for four days. After the first day the pain had entirely gone. After the second the pitting on pressure over the liver had gone, while the swelling was very much lessened. Since then the ipecac treatment has been continued and the swelling has gradually disappeared.

From these and many similar cases I am persuaded that it should very seldom be necessary to operate on amoeboid liver abscesses and that where it is considered necessary that persistence in the ipecac treatment will take away from the danger which is often consequent on such an operation.

I have also found ipecac almost invariably successful in cases of dysentery here and combining it with Tannic Acid, which counteracts the vomiting and other bad effects, I use it constantly even in dispensary practice. I have also found ipecac most useful in another complication of dysentery which is not at all uncommon here, viz., a condition where the mesenteric glands are enlarged, and there is a generally matting of the intestines causing a hard tumour most frequently in the lower part of the abdomen, with intense agony upon the least peristalsis of the bowel. Such tumours when consequent on chronic dysentery, I have found to melt away as if by magic under ipecac.

Ipecac is also most useful in cases where the liver abscess has burst into the lung or even into the bowel.

A CASE OF TRAUMATIC RUPTURE OF THE PROSTATIC URETHRA

By L P STEPHEN, M.B.,

CAPT., I.M.S.,

Presidency Surgeon, Bombay

THE patient, a Ghaniwallah, 25 years of age, was brought to hospital at 3 P.M. on the 27th of June 1910. He gave a history of having been kicked in the perineum from behind at 9 A.M. The kick which was delivered with a light pointed slipper caused him to feel faint for two hours. A large amount of blood escaped at the urinary meatus at the time of the injury.

The symptoms on admission were —

Tenderness and swelling in the perineum and retention of urine. The Assistant Surgeon on duty failed to pass any kind of catheter, and at 3.30 P.M. the bladder was aspirated supra-pubically and 23 oz of bloody urine was drawn off.

28th June — The swelling of the perineum had almost subsided, and there was no sugges-

tion of extravasation of urine. Patient was chloroformed at 9 A.M., and a full sized catheter was easily passed into the bladder. Blood-stained urine containing small blood clots came away. The bladder was then washed out with boric solution. In the evening a catheter was again passed and the urine then drawn off was almost clear.

29th June — This morning a catheter was passed into the bladder and clear urine came away, but on partially withdrawing the instrument a large amount of pure blood gushed out. It was estimated that the tip of the catheter was then in the prostatic urethra.

30th June — The temperature was up to 101°F this morning. The patient could now pass urine voluntarily, but the catheter would not enter the neck of the bladder, the point of the instrument appearing to be caught in the wall of the prostatic urethra. For the next two days the temperature remained about 101°F., and the patient complained of a certain amount of discomfort, but he passed his urine voluntarily.

2nd July — This morning patient complained of pain in the region of the hypogastrium, but there was no swelling to be seen on examination. By rectal examination the prostate was found to be both enlarged and tender. The urine was blood-stained and contained pus. Temperature was 102°F., pulse 130 and respirations 40.

3rd July — This morning there was distinct swelling of the soft parts in the hypogastrium. The swelling was diffuse and extended right across the abdomen and almost up to the umbilicus. It was distinctly inflammatory and slight deep fluctuation could be made out the right of the mid line. Patient was at once put under chloroform and a vertical incision 2½ inches long was made over the fluctuating area.

From the depths of the wound a small amount of decomposing urine, containing flocculus of pus and gas bubbles oozed up. The finger was passed into the wound and swept round the whole space between the anterior abdominal wall in front and the bladder and parietal peritoneum behind. The whole of the connective tissue in this region was found to be infiltrated with stinking urine, but the total amount evacuated from the wound did not exceed 2 oz.

A large cigarette drain $\frac{3}{4}$ inch in diameter was passed down behind the pubes and the wound was then dressed. An attempt was also made to drain the bladder by means of a rubber catheter, but it would not enter the bladder, its tip being caught in the region of the prostate. After the operation the whole of the urine came away by the supra-pubic wound which was dressed three times daily. As pus appeared at the urinary meatus a rubber catheter was passed at the time of dressing as far as it would go and antiseptic fluid injected. This fluid which was injected with difficulty welled up from the bottom of the wound cavity, showing that there was a communication between the urethra and

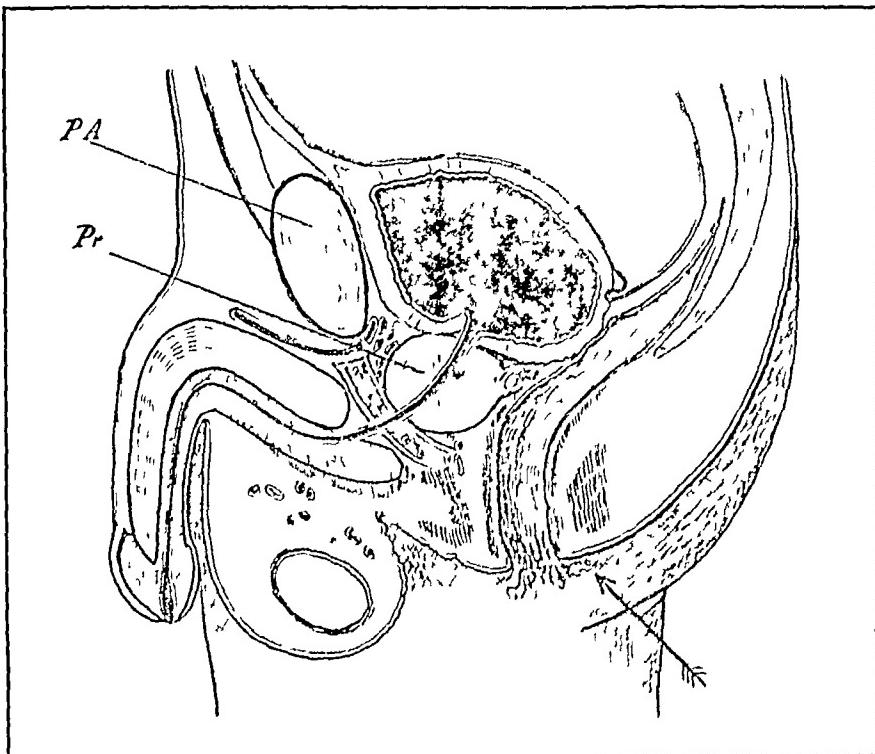
the wound. On rectal examination the prostate which was still enlarged was felt to be boggy, and when pressure was made upon it fluid welled up in the abdominal wound.

After History.—At first there was a very large amount of pus evacuated, and the whole of the urine came away in the dressings. The connective tissue which had been infiltrated with urine sloughed and was removed bit by bit at the time of dressing. Gradually urine commenced to flow again from the urethra and after a week as much as 25 oz were passed per urethram. The temperature of the patient fell to normal about this time and the discharge of pus from the wound which had been profuse, while the sloughs of deep connective tissue were separating became less. Eventually a clean granulating wound was left through which the urine had ceased to flow, and the patient left

indicated that the injury was behind the triangular ligament.

Reference to the accompanying diagram which shows the anatomical relations of the prostatic gland and urethra will demonstrate that the only way in which this injury could have arisen must have been by the impaction of the prostate against the pubic arch. It is probable that such an injury could only occur in a thin subject and at a time when the perineum was relaxed. The arrow in the diagram indicates the probable direction of the kick.

From the history of the case it seems probable that the immediate result of the injury was a rupture of the prostatic urethra and the formation of a haematoma in the prostate. This is borne out by the fact that blood escaped from the meatus at the time of the injury, and that this symptom was followed by retention of



the hospital quite cured in the beginning of August. Bacteriological examination of the pus from the wound showed the presence of *B. coli* and *B. pyocyanus*.

From the history of the case and the clinical symptoms it is apparent that the lesion produced by the kick was a rupture of the prostate and prostatic urethra.

The case has been recorded for the following reasons—

An injury of this nature from a kick in the perineum must be extremely rare. In Keen's Surgery it is noted that only once has such an injury been recorded from a trauma of the perineum. A much more likely injury would have been a rupture of the membranous or bulbous urethra; but the absence of any extravasation of urine in the perineum in this case

urine, caused in all probability by the accumulation of blood in the prostate. The passing of the catheter next day tapped this haematoma and so relieved the retention of urine.

The later swelling and tenderness of the prostate and the presence of pus in the urine indicated that the injured prostate had become infected, and the subsequent extravasation of urine in the prevesical tissue showed that a communication had been established between this space and the prostatic urethra. Whether this communication was brought about by a rupture through the capsule of the prostate at the time of the injury or by the later sloughing of damaged tissue is doubtful.

It is worthy of note that there were no signs of extravasation of urine until the 7th day after the injury.

Indian Medical Gazette.

JANUARY

ANNUS MEDICUS, 1910

THE year that has just passed away has been one marked by no specially great advance in medical science. In India, however, and as regards the Indian medical service the year has been one for foreboding and of uncertainty.

While, however, we have every sympathy with such feelings, we must confess to having but little belief in a necessity for them. We do not for a moment believe that the Government of India are not perfectly well aware of the value of the Indian medical service as an important asset in the administration of this country. They well know the need for and value of the civil branch of the service, as a means of efficiently staffing the colleges and medical schools of the country, of providing trustworthy and able executive medical officers in the districts, of managing the jails of the country and of controlling public epidemics and attending to the daily needs of the public health of the Provinces. Moreover, we know that Government fully recognise the need of a civil side to provide the reserve which will ever be necessary in the event of any great mobilisation of troops in this country. Those officers in civil employ should also remember that we are primarily a military service and that *in this lies our strength*.

We are therefore in entire sympathy with the efforts of the Director-General to improve the military side of the Indian medical service. That the regimental system of medical officers is well adapted to and popular with the Indian Army is an admitted fact, but it also must be admitted that a career which is of interest and sufficient for a junior Lieutenant or Captain cannot be said to be satisfactory or sufficient for a senior Major or Lt.-Colonel, and if the Committee presided over by the Director-General is able to reconcile these two divergencies it will have done good work for the service.

We have also to thank the Director-General for a new departure in giving brevet promotion to officers. The recognition that men can earn brevet promotion by civil, medical and scientific duties as well as by active service in the field, has been recognised even in the purely military

sister department, the R.A.M.C., and we hope to see many more instances of thus rewarding good work in the Indian Medical Service.

Turning now from service matters we have to chronicle the fact that the year 1910 has been remarkable for no great epidemic of disease. The great malarial outbreak of 1908-9 passed away, plague is still with us but has not in 1910 raged with its previous virulence, cholera has been bad in places, but there has been no widespread epidemic.

As regards malaria the work begun by the Simla Conference of 1909 has been continued, and a systematic study of the prevalence and intensity of malaria in India has been started. Each province has now its special Malaria Committee and we hope that the reproach that India has lagged behind in this matter will soon be removed.

That India has not been so behindhand as some critics would have us believe is well known to us in India. Antimalarial operations in many places have been put in hand and the question of a wider distribution of quinine has been strongly taken up in several provinces, notably in the new province of Eastern Bengal and Assam.

It is perhaps unfortunate that such works as these are not more widely advertised and made known to the public. The world and the critics in Europe judge us by what they hear is being done. Other countries have got *ludos* for antimalarial work, but on examination it is often not the good results effected which have brought credit and renown but the mere announcement that it is proposed to do them—or as in Mauritius the mere publication of what should be done.

In this respect we hope that the new organ of the Central Malaria Committee will be of use. We have already welcomed "Paludism," as the new publication is called, and it will be of great service if besides collating the research and other work done in India and elsewhere, it will give us details of antimalarial operations which have been arranged for or are in progress in various parts of India.

Plague has not been so virulent and widespread during the past year. We cannot say that it may not be again lit up in all its previous fury. But it is allowable to hope that after 15 years' prevalence there are at last some signs of its decay.

Cholera will probably ever be with us, but its etiology is now well understood and it is seldom that it is permitted to become widely epidemic. A great improvement has been effected in the sanitary control of the great foci of cholera, viz., the huge assemblages of pilgrims at fairs and *melas* in various sacred places in India. That of recent years no great pandemic of cholera has followed such concourses is entirely satisfactory and creditable to the Sanitary Departments concerned, and we hope that under the new organisation of the Sanitary Department as a branch of the Education Department of the Government of India that some of the millions annually devoted for education will find their way into the sanitary department.

Last year, 1909, we had to chronicle the great success of the Bombay Medical Congress. Early in 1910 the Burma branch of the British Medical Association had a very successful meeting which served to show the rapid steps which have been taken to bring Burma into line with medical progress in India. We look to Madras for the next Medical Congress, and it is not too much to hope that, in 1912 or 1913 at latest, that progressive presidency will take the opportunity to show what has been done in Madras.

Turning to our own columns we have to thank our numerous contributors and readers for the help given during the year to make this Gazette the organ of progressive medicine, surgery and public health in India.

Our circulation is larger than ever, it having quadrupled itself in the past decade. During the past year we published articles from not only well-known and old contributors, but also we are glad to say from numerous younger men in the profession. Among the more noteworthy articles published, apart from our special numbers, have been the admirable papers read at the Asiatic Society of Bengal on the ipecacuanha treatment of hepatitis. This method introduced by the ever indefatigable Major Leonard Rogers, I.M.S., has now been largely tried in India and an ever increasing number of medical men have come to believe that by the timely use of this long known drug hepatitis can be rapidly and successfully treated and liver abscess prevented. This is a very remarkable achievement.

Major Rogers' method of treating cholera by the injection of hypertonic saline solution and the use of calcium permanganate has been largely

used and it looks as if the death-rate will soon change places with the recovery rate, for already a recovery rate of about 70 per cent has been obtained in a long series of cases. The medical public will, therefore, be glad to hear of the approaching publication of Rogers' book on the treatment of cholera which is now in the press.

Other articles deserving of special mention are that by Capt Megaw on heart diseases in India, on nervous breakdown by Major Baile, on the treatment of filaria medinensis by Capt Hugh Acton, on dengue or phlebotomus fever by Lt-Col Wimberley, on ascariasis by Lt-Col P Hehn, on cholera treatment by Lt-Col Drake Blockman, and on dwarfs by Major C H James. The clinical reports of the Calcutta Medical College and of the Berhampore Asylum are also worthy of mention.

The Surgical side of our work has been well represented, by the papers in our special Burma Supplement in March, and by our special surgical number in October and by the overflow surgical articles in November. The admirable articles on the construction of operation rooms by Colonel King and by Major Gabbett are an indication of the fact that such modern operating rooms have been built or are now being built in many parts of India.

Eye surgery as usual has occupied our pages largely and we have frequently published the still varying views as to the value of the operation for the removal of cataract in its capsule which will be ever associated with the name of Henry Smith, of Amritsar. The operation for glaucoma modified by Herbeit is now largely practised by men of such experience in Eye surgery as Maynard and Elliot.

As regards the further differentiation of the fevers of India we have to record the establishment of phlebotomus or sandfly fever as an entity, but the question of its connection, if any, with dengue, seven day fever, or three-day fever is still an undecided matter.

The mystery which long surrounded beri-beri has, it would appear, been cleared by the proof of the danger of the continued use of highly polished rice, which in these days of steam machinery have especially in the Further East replaced the more primitive but safer methods of rice cleaning.

A new feature in this year's Gazette has been the publication of special articles, which either are written by experts or give a résumé of work

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done in other countries. This is a feature which has proved of interest and which we hope to maintain.

During the year many good books on diseases of the tropics have appeared, e.g., Daniels and Wilkinson's *Tropical Medicine and Hygiene*, Castellani and Chalmers' *Tropical Medicine*, Ronald Ross' *Prevention of Malaria*, Sir R. Boyce's *Health Progress in the West Indies* and the new and cheaper revised edition of Leonard Rogers' great book on *The Fevers of the Tropics*.

Service men too have written many books, during the year, e.g. *Notes on Sanitation in Japan* by Lt.-Col J. Smyth, I.M.S., *Smallpox and Vaccination in India* by Major S. P. James, I.M.S., *The Transactions of the Bombay Medical Congress*, edited by Lt.-Col W. E. Jennings, I.M.S., *A Handbook for Officers* by Capt H. Boulton, I.M.S., the fourth edition of *Medical Jurisprudence in India* by Lt.-Col L. A. Waddel, I.M.S. (retd.), *Sewage Disposal in India* by Major W. W. Clemesha, I.M.S., *Biology* by Capt Lloyd, I.M.S., a new edition of Ghosh's *Materia Medica*, by Lt.-Col J. T. Calvert, I.M.S., *Cataract* by Lt.-Col Henry Smith, I.M.S., *The Prevention of Malaria* by Major Ronald Ross, I.M.S.

THE RESEARCH DEFENCE SOCIETY

IT is with great satisfaction that we note the steady progress that is being made by the Research Defence Society in the important educational work to which it has devoted itself. The report presented to the annual general meeting in London in June showed a remarkable advance in the number of branches formed throughout the country during the previous year, and the area over which the Society's literature is becoming available, and its influence, beginning to be felt, is steadily extending.

The task which it has so courageously undertaken is indeed a gigantic one, it is no less than that of making up for over thirty years' neglect, on the part of the medical profession, of a vitally important subject. Had a society been formed twenty, or even ten years ago, to put the facts about experiments on animals accurately before the public, the prejudice that has grown up around the subject, in consequence of the activities of the anti-vivisection societies, could never have become so widespread nor so dense as it has. In the tribunal of men's minds,

when, year after year, only the case for the prosecution is represented by counsel, there is a strong tendency for judgment to go by default, even where it is the very righteousness of his cause that has led the accused to neglect the defence of it. The anti-vivisection societies have not only been successfully appealing to that large class of cranks and faddists to which the medical profession is so much too apt to relegate all their adherents, they have been winning over a considerable and an increasing number of quite sensible men and women, who would not have been calling themselves anti-vivisectionists to-day if the real issue had ever been put before them.

The more honour to those who, during all those years, silently refused to accept the picture of medical research that was so incessantly put before them, feeling that there must be another side to the question, although no one ever appeared to present it. It was not alone to the medical profession that the news of the formation of a Research Defence Society came as a welcome relief, and the moral support of thinking men and women among the laity, who have joined the society, is one of the most valuable assets it possesses.

A most important crisis in the history of British Medical Science is approaching. The issue of the Report of the Royal Commission on Vivisection, the evidence given before which was published some time ago, will mean that the present legislation which regulates experiments on animals must be re-cast. Whatever the recommendations of the Commission may be, everything that can be done by the forces of ignorance to render the new legislation as repressive as possible will be done. If ever the Research Defence Society deserved the support of every member of the medical profession who can possibly afford to contribute to its funds, it does so now. Our duty lies before us in the clearest way.

A few months ago a circular on the subject of the Research Defence Society was sent, among others, to all the European medical men and women in India by three officers of the I.M.S. The circular has been described by the Honorary Secretary of the Society as a "thorough success," but there is reason to believe that the support it has elicited would have been greater still if everyone who resolved to join the Society, on receiving the circular, had done so at once.

We remind those who delayed that the Honorary Secretary of the Research Defence Society is Mr. Stephen Paget, F.R.C.S., 21, Ladbrook Square, London, W., and that remittances should be paid to Messrs. Coutts and Co., Bankers, Strand.

We issue, with the present number of the *Indian Medical Gazette*, a double membership form, similar to that which was issued with the circular, for the convenience of our readers, few of whom, we trust, will refuse to support a cause so thoroughly worth defending as that of the honour and the usefulness of the scientists in their own great profession.

Current Topics

THE MEDICAL LIBRARY OF THE ASIATIC SOCIETY

In 1906, at the suggestion of Major L. Rogers, the Asiatic Society of Bengal sanctioned the formation of a Medical Section of the Society, which meets on the second Wednesday of each month as an adjournment of the ordinary monthly meetings. At that time the medical members numbered about twenty, out of a total of four hundred, while they have now increased to over one hundred, out of about five hundred, belonging to all parts of India. We have published many important papers read before the Society, the full discussions on tubercular diseases in 1909 (which is now bearing fruit in connection with the sanatoria to be organised in the United Provinces, Madras and Burma as memorials to the late King), and those on heart diseases and hepatitis during the past year having been specially noteworthy. The following information regarding the work and organisation of the Society may, therefore, be of interest to our readers.

In addition to the holding monthly meetings, which are very well attended, a successful beginning has been made in the formation of a medical library open to all the members, who are entitled to take out books. Early in 1910, the Council sanctioned a special grant of Rs 3,000 for the purchase of reference medical works, half of which has been already expended on in accordance with the recommendations of a special library committee, while the remaining sum will be available during the current year. In addition an annual grant of several hundred rupees will be spent each year on medical works, which will enable the more important new issues to be purchased. Equally valuable are the medical journals, over thirty of the most important being received through the Editor of the *Indian Medical Gazette* from the exchanges of this journal, which previously

were thrown away after a few extracts had been made from them. They have now been preserved and bound by the Medical Society for the past three years, and before long will constitute a most valuable portion of the reference library. Moreover, back volumes of about a dozen of the most widely read medical journals have been presented by different members, and more will doubtless be received from those who find such collections cumbersome to carry about and realise that they will be made good use of if presented to the Society. Altogether a good start has been made in founding a reference medical library open to the profession at large.

In order to make the journals of use to members resident outside Calcutta, the medical secretary issues every month or two a list of references to the more important papers in the journals received by the Society, and any member can write for a journal containing a paper he wishes to read. Several of the best known medical research workers in different parts of India have joined the Society for the sake of this advantage, the lack of which is a great handicap to original investigations in this country.

Enough has been said to show that the new Society fulfils more than a local want. Medical men join as ordinary members of the Asiatic Society of Bengal, their names being submitted to the Council after being duly proposed and seconded, and can then be elected at the ordinary monthly meeting one week later. The entrance subscription is Rs 32 and the quarterly one for members residing more than 30 miles from Calcutta is Rs 6, which entitles them to the Journal and proceedings and the memoirs containing papers of all the branches of the Society and to reprints of the papers read before the Medical Section, while they are also eligible for the honour of election as Fellows. Lists of new medical books and journals are sent to the members from time to time. Unbound journals can be taken out for one week. Books can be sent to members who defray the cost of carriage and can be kept up to three months. The Medical Secretary will be glad to answer any inquiries from medical men wishing to join the Society, whose house is at 1, Park St., Calcutta. The Council have under consideration a scheme for rebuilding the premises on a scale worthy of the oldest scientific and literary body in India, so as to be able to better accommodate the very valuable general library which has been collected during a century and a quarter's existence.

VACCINE THERAPY

(1) In the proceedings of the Royal Society of Medicine (Vol III, No 9, Supplement), October 1910, a very full discussion (extending over 6 meetings) on vaccine therapy its administration, value and limitations, is reported. The debate was opened by Sir Almroth Wright, and

many leading clinicians and bacteriologists took part in it. A number of interesting problems were considered, and it is only possible in this notice to direct attention to a few of these. The full report itself should be consulted by those interested in this question. A perusal of the papers leaves the impression that finality has not yet been reached, indeed Sir Almroth in concluding his opening speech states, "There lies before us here a wide and very difficult and unexplored field of work."

"Something lost behind the Ranges Over yonder Go you there"

The relationship of the clinician to the bacteriologist was very fully dealt with Sir Almroth says, "That if we deprecate the treatment of cases by the unqualified on the ground that such treatment may sometimes be perilous to the patient, and if we condemn consultation by correspondence on the ground that this system would often work badly we must, on the same basis, condemn the system by which the bacteriologically uninstructed delegate bacteriological work to the laboratories if this system is occasionally perilous to the patient and if it often works to his disadvantage." Amongst other instances he cites the case of his having been asked to look for the malaria bacillus in the urine. The general trend of opinion was that the clinician and bacteriologist should be closely associated on equal terms, that the laboratory should be in intimate connection with wards of the hospitals. This question is one of special interest in India where the problem of the location of laboratories for medical research has not yet been finally solved.

Most of the speakers were in favour of vaccine therapy, but on the question of its control by estimating the opsonic content of the blood, opinion was divided as to the practical utility of the method. Even Sir Almroth says, "While I have insisted, and continue to insist, that there are many cases where we are not doing the best for the patient if we are not controlling the effect of our inoculation by the opsonic index I have from the very outset recognised that vaccine therapy can in many cases be carried out with success without its aid." To explain the necessity for a long succession of inoculations in long standing infections Wright compares the human body to a garden, the vaccine therapist to a gardener, and pathogenetic microbes to weeds which can be thinned out, but which, so long as any of them remain over, retain their power of multiplying and regaining lost ground. Dr St Clair Thompson in commenting on this in relation to nasal disease, states that, "Patients cannot afford to keep a medical gardener permanently to look after their nasal flora, what they want is a plumber, who will put things in order with a greater chance of permanency." Other speakers also emphasize the necessity of opening abscesses, removing dead bone, scraping teeth, etc., when required.

in fact, the plumber as well as the gardener is essential in certain cases.

The question of administration of vaccines by the mouth was discussed by some of the speakers, its utility appears to be limited however.

This discussion will form a very valuable addition to our knowledge of this subject.

(2) A second edition of Professor Tanner Hewlett's useful little book on Serum and Vaccine Therapy* has just been issued. In this edition the text has been revised throughout and much new matter has been incorporated. New chapters on the treatment of disease by bacterial vaccines and sour milk have been added. In the first chapter the subject of immunity, including Ehrlich's well known 'side chain' theory, is discussed. Chapters dealing with the preparation of antisera, the principles of the treatment with antisera, the various anti-toxic and anti-microbial sera follow. A chapter is devoted to the subject of transfusion. In this chapter the Author states "The injection of saline fluid has recently been advocated in the treatment of cholera." Seeing that saline injections for cholera were introduced by Mackintosh, of Edinburgh, in 1831, and very strongly advocated by Wall in his book which appeared in 1893, the Author might revise this statement in his next edition. Rogeis' important work on the injection of hypertonic solution in the treatment of cholera is referred to. Chapters on vaccine therapy methods of producing active immunity, tuberculin and sour milk complete the work. In the chapter dealing with sour milk the Author states that tablets, etc., are comparatively inefficient.

This little work can be confidently recommended to those requiring information on the subject with which it deals.

SURGICAL WORK AT RANGOON GENERAL HOSPITAL

We are very glad to see that the Superintendent and staff of the Rangoon General Hospital have commenced to publish a report of the work done in that admirable institution.

Our columns have often contained papers by the staff of this hospital, but we are strongly of opinion that it is good to put on record the work done. Annual reports of the Administrative Head of a Department are necessarily written from a popular or at least non-professional point of view, therefore we welcome a purely professional account of the operative work done in a big hospital like that in Rangoon.

It is needless to say that such work cannot be properly chronicled and put on record as long as the hospital staff does not contain a Medical

* Serum and Vaccine Therapy By Professor Tanner Hewlett, M.D., etc (T & A Churchill, London. 7s 6d net.)

or Surgical Registrar. The present report commences by noting the loss to the hospital caused by the absence on sick leave of Lt-Col R E Davis, I M S, who (for a second time) contracted blood poisoning in the performance of his duties and had to take long leave to England.

The description given of the work of the hospital under various headings is excellent and of great professional interest. It contains notes on head injuries (*v* also our Burma Supplement, March 1910) on the mobilization treatment of fractures, sprains and dislocations. We also note cases of lymphangioplasty for attempted cure of elephantiasis of limbs. The remarks on hernia and hydrocele are of interest. We note that there were only seven operations for scrotal elephantiasis—this affection not being apparently common in Burma. Stone in the bladder is also rare—only nine operations. The section devoted to abdominal operation is especially good and interesting; it is based on 13 exploratory laparotomies, 12 intestinal obstructions, 30 strangulated hernias, 17 operations for appendicitis, 5 appendicostomies for chronic dysentery, 10 penetrating wounds, 8 for peritonitis, 6 gastro-jejunostomies and 11 laparotomies.

The notes on volvulus are of interest. This disease is said to be fairly common among natives of India. We also direct attention to the section on pancreatitis, four cases of which came under observation. The remarks on ascites are good and of universal interest in India. Two cases of splenectomy, one recovery, are recorded and four cases of gall bladder drainage. The sections on Gynaecological operations and on Eye operations are also well worth recording and the pathological report contains a valuable note on the bacterial flora of suppurating cavities. The note on phagocytic ulcers was deserving of separate publication.

We congratulate the surgical staff of the Rangoon Hospital on this excellent record.

Up to the present time, Dr Coley has had 52 cases of inoperable sarcoma successfully treated with mixed toxins of *crysipelas* and *bacillus prodigiosus*. Of these 35 have remained well from $3\frac{1}{2}$ to 16 years, 28 from 5—16 years, and 14 from 10—16 years.

In the first 36 cases published, in addition to the tumours being adjudged inoperable by leading surgeons, a careful microscopical diagnosis was made in all but two instances. Taken with the successful results of other men there are over 100 cases now on record where undoubtedly sarcomata have disappeared under Coley's fluid, and where poor hopeless sufferers in the last stages of inoperable sarcoma have seen their tumours steadily disappear. These results should be sufficient to convince the majority of the profession that the treatment of inoperable sarcoma by certain bacterial toxins contains a principle of sufficient value to be entitled to more careful consideration than it has yet received.

Reviews

Major Ross's book on the prevention of Malaria.—This book runs to 669 pages and is divided into two parts, the first part is by Major Ross and contains an analysis of the general problems and difficulties of the subject, the second is by various writers and is said by Major Ross to contain "the thoughts and observations of the able men who have themselves worked in this laborious field or are in the best position to furnish the required information."

Major Ross begins his portion of the book with a sketch of the history of malaria and of the discoveries relating to that disease. The account rightly gives great prominence to his own discovery, but without for a moment underrating the brilliancy and epoch making character of that work, we cannot avoid regretting that the account of it is marred by failure to give adequate honour where honour is due, and by magnification of the extent to which the discovery was hindered by the exigencies of official duty in India. As regards the first of these criticisms we refer especially to the failure to give due honour to Sir Patrick Manson, whose master-mind originated, and at least in part directed, the research, and without whose constant encouragement and practical help, Major Ross would probably have abandoned the research before it had been brought to a successful conclusion. As regards the second there is much which could be said. The next section of this chapter contains the confirmations and extensions of his discovery, and the next deals with the recent history of prevention. This account consists, for the most part, of an endeavour to explain the meaning of the author's earlier statements in regard to the applicability and practicability of mosquito reduction, and we gather from it that Major Ross meant something quite different from what he wrote. In our view, a frank statement to the effect that some of his earlier opinions required modification, in the light of further knowledge, would have been preferable, and such a statement would have formed an effective introduction to the chapter containing his present opinions on this and other aspects of the problem of prevention,—a chapter which, as evidencing how complete the modification has been, is, perhaps, the most striking in the book.

Chapters II to V contain a summary of facts regarding malaria, and are stated to be suitable for public instruction. Not a little of the material in these chapters has been reprinted from the author's report on malaria in Mauritius, which was published more than two years ago. That is a long period in the modern history of malaria, and it is, therefore, unfortunate that, as regards parts of the reprint, the author has not troubled to bring the information

up to date and to correct some rather crude observations and indifferent English. We refer especially to the three or four pages under the heading *facts about mosquitoes*.

In our opinion the most interesting and important new matter in these chapters is concerned with an extension of Major Ross's mathematical arguments. He seeks to prove (1) that the amount of malaria in a locality tends towards a fixed limit determined by the number of malaria-bearing mosquitoes and by other factors, (2) that if the number of malaria-bearing mosquitoes is below a certain figure (say below 40 per person), the ultimate malaria rate will tend to zero—that is the disease will tend to die out. The arguments relating to these conclusions will doubtless be examined in detail by those who have made the habits of anophelines and the mathematics of malaria a special study. For ourselves we would remark only that, so far as we are aware, the assumptions with which Major Ross enters upon the argument do not accord with the known results of experimental enquiry,—indeed some of them, as, for example, the assumption relating to the recovery rate, are inconsistent with statements made in the early chapters of the book. It also appears to us that Major Ross has neglected to allow for some very important habits of anophelines, such as that an anopheline bites not only twice, during its life (once to receive the infection and once to give it), but on almost every night during perhaps a month or more, and again that an anopheline frequently bites not only one, but several people, each night.

Another interesting argument deals with the "relation of mosquito output to extent of breeding surface," and in this case, the conclusion tends to agree with the commonsense view that the annihilation of only a proportion of the breeding grounds in a place is not necessarily accompanied by any reduction in the total mosquito output. The argument therefore nullifies the old view that to do away with even one breeding place must do some good. It has long been held by workers in India that where facilities for breeding are numerous, any operations which fall short of almost complete extirpation of breeding grounds may produce no appreciable effect on the output of mosquitoes, and it seems probable that with further experience Major Ross will also be of this opinion. At present, however, he does not go further than to admit that the reduction of output may not be in the same proportion as the reduction of breeding surface. In his summing up he says, "if the breeding surface is reduced to a half, the output of mosquitoes will also be probably reduced very considerably, but it may not be reduced exactly in the same proportion." A simple illustration will perhaps serve to show that the first part of this conclusion is untenable. Suppose a village surrounded by a *gheer* two miles long and on the average half a mile

broad, and suppose that the water is made to flow away to such an extent that the breeding surface is still two miles long, but is only a quarter of a mile broad. The area of the breeding surface will have been reduced to a half, but obviously it is still so considerable that it is ample for the needs of all the mosquitoes in the village. It is probable that in nearly all malarious towns and villages, the breeding surface available for use by mosquitoes is so much greater than those insects require, that its reduction to one-half, or even to one-quarter, or one-eighth, might be carried out without diminishing the mosquito output at all. The following sentence from the report by the committee of enquiry into the measures taken against malaria in Mian Mu expresses the same thought "The circumstance that a very great, but not altogether perfect, reduction of breeding places does not appear to have been accompanied by an improvement of malarial conditions, may possibly indicate that partial abolition is of no avail until a point is reached nearer total abolition than has sometimes been anticipated." Lack of space prevents us from dealing with many other matters contained in these chapters, but as regards the prevalence of anophelines in a place we may note the modification of Major Ross's views with reference to the possible influence of flock-migration, carriage by vehicles, boats, rivers and winds, and especially the influence of food supply. In recording some of the newer information upon these and many other subjects it seems probable that Major Ross has been aided by the results of recent investigations in India, and, if this is so, we cannot, but regret the peculiar attitude adopted by him in regard to the work that has now been carried on continuously in this country since 1900. This attitude will be clear from the following examples of remarks that are scattered throughout the book. On page 572 it is said that up to the present the work in India seems to have been wanting in intelligence. From page 216 we are led to infer that workers in India have little knowledge of the value of scientific evidence. From page 179 we gather that the anti-malarial operations in Mian Mu were undertaken in the hope of proving that, when local breeding places are destroyed, mosquitoes will rush in from outside to fill up the deficiency. On page 209 the exceedingly important observations of Christopher and Bentley on the effect of "tropical aggregation of labour," are condemned, because "they did not deal with the subject quantitatively." Finally on behalf not only of Indian workers, but of workers in the tropics generally, we must enter a protest against the manner in which Major Ross attempts in this book to depreciate the value of recent observations, on the ground either that they only confirmed his own researches, or, that their results were long ago perfectly familiar to a great number of people (page 37, &c.)

In Chapter VI Major Ross sums up his knowledge regarding the utility and practicability of various preventive measures in an exhaustive and admirable way, and in general this chapter is free from the evidences of bias to which we have felt it our duty to draw attention above. We note a very remarkable and welcome change in Major Ross's views as to the relative utility and practicability of the different measures, and it would seem that, on all the more important issues, his opinion is now identical with that which has been held for some years by workers in India. He now admits that it is only the academical hygienist who believes that any measure which suggests itself is sure to be practically useful, that although mosquito reduction is called for in crowded areas, quinine is the proper measure amongst a scattered population, "where," as he says, "anopheline reduction would be too expensive for the local funds," and that ultimately the measures to be adopted must be framed according to local feasibility. We note also that although in 1902 Major Ross advocated a specialized policy of concentrated effort upon one measure, and stated that the advice to employ not one, but all possible measures, was not practical, (Mosquito Brigades, page 52) he now considers that the proper policy is an opportunist one which uses any and every weapon it can. Considering that during recent years workers in India have undoubtedly originated a new school of thought and research in connection with malaria, we are led to believe that, in part at least, the changes of opinion of which the above are only a few examples are due to a perusal of the results of work in this country. Indeed, while reading some of Major Ross's similes we were irresistibly reminded of certain passages in the papers read at the Imperial Malaria Conference in October 1909. Our meaning will be clear to anyone who compares the remarks on page 310 of Major Ross's book, with those in the penultimate paragraph on page 8 of the proceedings of the Conference. Major Ross says on page 572 of his book that the conclusions of the Conference simply confirmed his proposals. As indicating that workers in India have at last accomplished something which Major Ross does not condemn *in toto*, this is good news, and our satisfaction at hearing it is not lessened by our inability to find similar proposals in the books and reports published by Major Ross prior to the date of the Conference.

We purpose reviewing the second half of the book in next month's issue.

The Treatment of Cataract—By LT COL HENRY SMITH, B.A., M.D., M.Ch., Indian Medical Service
Messrs Thacker, Spink & Co, Calcutta, 1910.

THE medical profession in general, and Ophthalmic Surgeons in particular, owe a debt of gratitude to Col. Smith for the publication of this work. A great part of the subject

matter is familiar to the profession in India through articles published from time to time in the *I.M.G.* and to a certain proportion of the profession in America where "extinction in the capsule" has recently come in for a good deal of discussion. The book now places within the reach of the whole English-speaking profession, the details of the technique of the operation with which Smith's name is rightly associated. As such, we have no hesitation in saying that it is by far the most important work on cataract which has been produced for very many years.

As its name implies the work covers a wider field than "Smith's operation," but it is in this operation that its interest and chief value are centred.

As one would expect from a man of Col. Smith's experience, the descriptions are, for the most part, of a severely practical character, even in his classification of cataracts he has one eye fixed on the operating table. The utility of the book is greatly enhanced thereby.

The description of the operation itself is minute and clear, and Dr Vail's excellent drawings assist materially in arriving at a proper understanding of it, but we can endorse Col. Smith's assertion that a man who has had no experience of the operation is scarcely in a position to undertake it however well he may have mastered the descriptive details. He devotes a short chapter at the end of the book to the rôle of assistant in the operation, and the importance of the subject fully justifies this. What must strike operators who complete their operations with the speculum in the eye, is how he finds room for completing the delivery of the lens with the patient's eyeball directed upwards. In his method there is room and to spare in an eye with a normal canthus. If there is not, the assistant is more interested in the operator's work than in his own.

The book is full of small, but very important, practical "tips" which should be useful to operators whatever method of operation they adopt. He also has something to say regarding controversial topics, such as loss of vitreous, choroidal detachment, post-operative uritis, &c. These have caused considerable discussion in the past, and with a wider publication of his views on these points, there should be a good deal more. This alone should justify the book. The sooner these points are settled in the minds of the profession at large the better it will be for the patient suffering from cataract. It is enough to say that at the present moment there are probably not more than half a dozen men who are really in a position to express an opinion on these points in relation to "Smith's Operation."

The book should do something to dispel the delusion which seems to prevail outside India, that the eye of the native of India has a peculiar tolerance to manipulative interference. In this connection it is interesting to note that

some of the earliest European extractors of cataract in India gave an exactly opposite excuse for their want of success.

Throughout the book Col. Smith expresses his opinions in no ambiguous terms. His opportunities for observation have been, and are, unparalleled and he has earned the right to give the results in terms which would be purely dogmatic from many another pen.

In an appendix are given the results of Capt. Listel's enquiry into the ultimate effects of escape of vitreous which should go far to disprove the alarmist views somewhat recklessly expressed in many quarters regarding the dangers of this accident.

The type of the book is good, and Messrs. Thacker, Spink & Co have admirably reproduced Dr. Vail's Drawing.

Historical Records of the Governor-General's Body-Guard—Compiled by Lieut. V C P Hodson, 10th D C O Lancers London W Thacker & Co Calcutta Thacker, Spink & Co 1910 4to, pp XIV, 414

THIS magnificent book gives a detailed history of the Body-Guard, from its formation in 1773 to date. This history fills the first 177 pages. It is followed by numerous appendices, some of which contain matter of much interest, war services, strength and class composition, lists of European officers who have served in the Corps, biographical notices of combatant officers, medical officers, veterinary surgeons, riding masters, European non-commissioned officers, and native officers, the Dera Dun and Ballyganj cantonments uniform, and general orders and letters relating to the Corps. A Glossary, Bibliography, and Index follow. There are five beautiful coloured plates, two maps of Ballyganj cantonments, three half-tone plates, and ten portraits of distinguished officers who have served in the Corps.

The Body-Guard was first raised in 1773, when Warren Hastings was Governor of Bengal. He became the first Governor-General of India on 20th October 1774. It was known at first as "The Governor's Troop of Moguls". Other names by which it was known during the first ten years of its existence were "The Troop of Horse Guards" and "The Troop of Black Cavalry".

Prior to the formation of the present Body-Guard, a European Body-Guard existed for ten years, being the first Cavalry in the Bengal Army. Raised under the Governorship of Vansittart in 1762, this Corps was disbanded in 1772. From 1782 to 1785 Warren Hastings had also an infantry Body-Guard, Captain Polhill's regiments of 750 men.

For the best part of a century the Indian Government seem to have been unable to make up their minds what the functions of the Body-Guard were to be, whether they were simply a personal guard for the Governor-General in

war, used in State ceremonial in time of peace, or whether they were to be a regular cavalry regiment, keeping order when required in Bengal in peace time, furnishing a cavalry force for service anywhere in time of war. These two views prevailed alternately, and the strength of the Body-Guard varied with them, the numbers being repeatedly increased and diminished. When raised in 1773, the Corps consisted of only one troop, fifty strong, which by the end of the year had risen to 100. Reduced again to 50 in 1785, raised to 190 in 1792, reduced to under 100 in 1793, their disbandment was ordered in 1796, but not carried out. In 1802, there are 288 natives, besides European officers and two light guns, in 1803, for the second Maratha war, six officers and 430 natives of all ranks. Reduced to 125 in 1806, and to 108 in 1809, in 1823 there were ten Europeans, and 433 natives, while in 1825 it reached its greatest strength, 523 rank and file serving in the first Burmese war, in addition to, are troop left at Ballyganj. In 1827 they were again reduced to 138, but in 1842 were 358 strong, and in 1845, before the Sutlej or first Sikh war, were increased to 530, including no less than nine European officers. From 1847 to 1856 the numbers were gradually reduced to under 200, in 1857 to 133, and in 1869 to 68 of all ranks. In 1875 they were increased to 122, and have ever since remained at about that strength.

The Body-Guard has a fine record of active service, having taken part in the Rohilla campaign of 1774, the third Mysore war of 1791-92, including Bangalore and Seingapatam, the second Maratha war of 1804-05, the conquest of Java in 1811, the third Maratha war of 1817-18, the first Burmese war of 1824-25, the Gwalior was of 1843, including the battle of Maharajpur, and the whole corps served throughout the Sutlej war of 1845-46, being present in all four actions, Mudki, Ferozshahi, Aliwal, and Sobraon. At Mudki they suffered more severely than at any other action in their history losing their commandant, Captain C D Dawkins, who died of his wounds, Lieutenant Fisher, killed, and Lieutenant Reynell Taylor, severely wounded.

Besides the above considerable wars, they have served in numerous minor campaigns in India. One native officer and 26 rank and file served as volunteers in the expedition to Egypt under Sir David Baird, in 1801. This was the first occasion on which Indian troops were employed beyond Asia, while the Java war was the last in which native troops served against Europeans. A small detachment took part in the Panjab war. During the mutiny the Body Guard did duty in Calcutta, without arms.

The Body Guard were present with Lord Hastings, in the third Maratha war of 1817-18, when the famous outbreak of cholera took place in the Governor-General's camp, sometimes

said, but erroneously, to be the first great epidemic of cholera in Indian History.

In August 1800 a Medical Officer of the rank of Assistant Surgeon was sanctioned for the corps. Subsequently a medical officer of any rank was allowed. The last to hold this appointment was a very senior officer, Surgeon-Major G. Banister, who held it for four and a half years, from June 1866 to January 1871, when the appointment was abolished. Banister was promoted to D.I.G., four months later, on 5th May 1871. The medical charge of the Body Guard then devolved on the surgeon to the Viceroy, in his absence, as an additional charge, on one of the medical officers at the Presidency.

Among the famous officers who have served with the Body Guard at various times are Field Marshal Sir Neville Chamberlain (1843-44), General Sir John Doveton (1802-05), Colonel T. Rattray, who afterwards raised Rattray's Sikhs (1855), and General Reynell Taylor (1844-46).

During the seventy years while the Body Guard had a special medical officer of their own, thirty-two Surgeons appear to have served with the Corps. The first was Asst-Surgeon W. L. Giant, who held the post for nearly eleven years, 1800-1811. His successor, Asst Surgeon G. J. Gordon, served with it for the greater part of the next nine years, 1811-1820, including the Java war. During the third Maratha war of 1817-18 he was absent on leave, Asst-Surgeon the Hon'ble Francis Sempill serving with them during that campaign. Of the other 29 medical officers, we can only mention a few of the most distinguished M. J. Bramley, first Principal of the Calcutta Medical College (1830), F. H. Biett, Professor of Surgery in Calcutta (1836-1841), E. Campbell, served with them through the Sutlej campaign, and was present in all four actions (1845-1854), H. M. Martin (1856-57), Sir James Ranald Martin served with them in the first Burmese war (1821-1829), and H. Walker, afterwards Professor of Anatomy and Physiology in Calcutta, he served with them from 1841 to 1845, including the Gwalior war and battle of Mahanajpur. On 11th April 1845, he was appointed Surgeon to the Governor-General, Lord Hardinge, with whom he served through the Sutlej campaign, being present at Mudki, Ferozshah, and Sooraon.

Out of the ten portraits of eminent officers in the book, two are those of medical officers, F. H. Biett and Sir James Ranald Martin.

The compilation of this fine work must have been a labour of love to its author, and like virtue must be its own reward. Though the price, twenty-one rupees, is high, it is probably insufficient to cover the cost of publication. The publishers have done their work well, both paper and print are excellent, the coloured plates are very fine, and there are very few misprints. We consider the work deserving of great praise.

Philosophies—By RONALD ROSS London John Murray, 1910 Price, 1s net

We have in another column dealt with Major Ronald Ross as a practical hygienist and scientific worker, in this little volume we meet him in a capacity unexpected and unknown to many. The little volume entitled *Philosophies* contain verses written in India between 1881 and 1899, and many of them when occupied with his well-known malaria researches. We have read the majority of the poems with distinct pleasure, their prevailing tone is pessimistic, and Major Ross was apparently much impressed with the poverty and unhappiness of the people of India. We confess we cannot agree with him here. There is poverty—the poor are with us in India, but where is this not so? Are the poor in India as badly off as the poor in England? We saw scenes on the Thames Embankment a year ago which were infinitely worse in that cold November night than any misery we have seen in many years in India. We think Major Ross is entirely off the line when he connects 'Unrest' in India with bad sanitation, etc. The poor fakir begging by the roadside—with his "sores" is not a pleasant sight, neither are the beggars which swarm in every European continental city. "An ancient race Outworn" is what Major Ross's pessimism sees.

Let us quote a few lines—

"The painful faces ask, can we not cure?
"We answer no, not yet, we seek the laws
"O God, reveal tho' all this thing obscure
"The unseen, small, but million murdering cause"
(p 21)

On a former occasion we have quoted the well-known lines written on the discovery of the parasites of Malaria in mosquitoes—

"This day relenting God
"Hath placed within my hand
"A wondrous thing, and God
"Be praised
"I know this little thing
"A myriad men will save... . . .
"Before Thy feet I fall
"Lord, who made high my fate,
"For in the mighty small
"Thou showest the mighty great"

We recommend this little volume to our readers, they are many who will read it with pleasure.

Scientific Memoirs, No 38 Report on Killing of rats and rat fleas by hydrocyanic acid gas—By Capt W D H SILVENSON, M.B., I.M.S., Bombay Bacteriological Laboratory Calcutta Supdt, Govt Printing Price, 8 annas

THIS is a record made of experiments conducted by Capt W D H Stevenson, I.M.S., at the Bombay laboratory on the value of a suggestion made by Major Glen Liston as to the possibility of exterminating rats and rat fleas by means of hydrocyanic gas. This gas is

largely used in the United States for the purpose of fumigating nursery stock and as a means of ridding orchard trees of their pests. It has also been successfully used in the Cape for ridding jail wards of the bed bug and sleeping cars in South Africa are nowadays rid of vermin in this way. The gas is made by the action of sulphuric acid and on potassium cyanide. The room to be fumigated is made airtight. The sulphuric acid is placed in an open dish and a lump of cyanide added. The period of exposure should be at least two hours and the room should not be entered till some hours after and then only after opening the doors and windows from outside. A whiff of faintly strong gas kills at once.

Rats and fleas and many insects are killed at once. Grain so disinfected is not made poisonous or dangerous.

Capt. Stevenson concludes that it is a rapid and effective disinfectant of clothes, but it is too dangerous for general employment as a disinfectant for plague-infested houses.

Medical Society.

MEDICAL SECTION OF THE ASIATIC SOCIETY OF BENGAL

THE November meeting was held on the 9th when the Secretary announced that about one hundred pounds worth of medical reference books selected by the special committee had been received and could be taken out by members under the conditions of the library rules.

Lt.-Colonel Dury (in the chair) showed two Indian brothers, one a young boy presenting a cretinoid condition, together with enlargement of the thyroid gland, and the other a young man with a myxoedematous condition with a greatly enlarged thyroid. Both had markedly improved on treatment with thyroid extract. Coloured drawings of the condition on their admission were also shown.

Lt.-Colonel Maynard showed a case of venous angioma of the orbit. When in the erect position the eye on the affected side appeared to be sunken, but after he had held his head down for a few minutes marked proptosis was evident. He proposed to try electrolysis in its treatment.

Captain Megaw showed (1) A case of Captain Munro's of pigmentation of the face and hands of a patchy distribution following the use of quinine in a Mahomedan. A section of the skin had been cut by Major L. Rogers, but only some excess of the normal pigment was found. (2) A European suffering from leprosy, who had shown marked improvement without any active treatment. The case showed the necessity of caution in attributing a temporary improvement to the use of any specific treatment such as nastin, which two speakers stated they had used

without any effect in leprosy. (3) A case of angioneurotic oedema in a young adult European patient.

Lt.-Colonel Maynard read a paper on the use of bismuth paste in the diagnosis and treatment of sinuses (which will be published in due course).

Dr. Adrian Caddy referred to a paper in the Annals of Surgery for May on this subject. The paste was first used for diagnosis and subsequently found to possess a curative value. Bismuth subnitrate is used.

SPECIAL ARTICLES

I

SIR JOHN McNEILL, G.C.B.

MESSRS MURRAY AND CO have recently published a Life of the Right Honourable Sir John McNeill, G.C.B., compiled by his grand-daughter. Of the many distinguished men who have done good service to the State, in the Indian Medical Service, McNeill stands pre-eminently first. Able in his profession, fearless in action, successful in administration, wise in counsel, he carved his name deep in the annals of British diplomacy in the Middle East.

John McNeill, third son of John McNeill, Lord of Colonsay, was born on that island on 12th August 1795. He attended the Arts classes at Glasgow in 1806, and at St Andrews in 1807-1809, and entered Edinburgh University as a medical student in 1811, taking the degree of M.D. in 1814. The same year, at the age of nineteen, he married his first wife, Innes, daughter of George Robinson, of Gask and Cleinston. He received a Commission as Assistant Surgeon in the Bombay Medical Service in 1816, sailed on 4th May 1816, and landed at Bombay in September, but had the misfortune to lose his wife, on 5th November of the same year. He took part in the Third Mahratta War, joining the Baroda Field Force in November 1816, and was present at the capture of Palampur, Deesa, and Kuirja, in the Southern Konkan, at the capture of Kairi, and in Cutch, at the capture of Bhujia. He was then sent with the Expedition to Persia in 1819, returning to India in 1820. During the same year he was appointed to succeed Dr. Richard Sharp as Surgeon to the English Mission at Teheran, and left India for ever. He subsequently wrote that, out of fifty months' service in India, above forty were spent in the field, and the greater part of the remaining ten on a sickbed. Even out of these four years, much of one year was passed in the Expedition to Persia, the scene of his future labours.

* Memoir of the Right Hon. Sir John McNeill, G.C.B., and of his second wife, Elizabeth Wilson. By their grand-daughter. With Portraits and Illustrations. London: John Murray, Albemarle Street, W., 1910 [Large Octavo, pp. VIII-426, price 15 shillings].

During the early years of the nineteenth century, several English Missions were sent to the Court of Fateh Ali Shah, who had succeeded his uncle, Agha Muhammad, first king of the Kajar dynasty, on the murder of the latter in 1797. In November 1800, Captain (afterwards Sir John) Malcolm was sent by the Indian Government to the Court of Persia. In 1807, Sir Harford Jones was despatched by the British Government as Envoy, with Mr. Monier as Private Secretary, and Mr. (afterwards Sir) Henry Willock as Assistant. Malcolm was also again sent to the Persian Court from India in 1808, having on his staff, amongst others, Buggs, the translator of Fenista, Rawlinson, and Captain Kinnon, afterwards Sir John Kinnon Macdonald. In 1811 Jones was succeeded by Sir Gore Ouseley, who returned to England in 1814, leaving Monier as Charge d' Affaires. Monier was succeeded by Henry Willock, who held that post at the Court of Persia when McNeill arrived as Medical Officer in January 1821. Treaties with Persia were negotiated by Malcolm in 1800, Jones in 1809, Ouseley in 1812, and by Monier and Ellis in 1814.

Early in 1822 Henry Willock thought it advisable to proceed in person to England, leaving his brother, Captain George Willock, in charge, and took McNeill with him, while at home McNeill married again, on 1st January 1823, his second wife being Elizabeth Wilson, who shared his early hardships and his later successes for forty-five years. He left England for Persia, with his wife, on 30th June 1823, travelling via St Petersburg, and reached Tabriz on 8th October. The Indian Government in 1824 determined to appoint Colonel Kinnon Macdonald as Envoy to the Court of Persia, Henry Willock remaining as first Assistant, Captain J. N. R. Campbell being appointed second Assistant, and Dr. Magrath, of the Bombay Service, Surgeon, McNeill remaining on somewhat indefinite terms in political employment. Macdonald's mission was not actually sent for over a year. Dr. Magrath resigned his appointment as Surgeon, and when Macdonald and Campbell joined, in 1826, McNeill remained as Surgeon. Henry Willock was sent home on duty in August 1826. The Persian Government considering that an Envoy from India was inferior in dignity to one from England, in December 1826 Macdonald was appointed to represent the Court of St James, as well as the Government of India, at Teheran.

In 1826, a longstanding dispute between Persia and Russia culminated in war. The Persians, successful at first, were completely defeated in the end. Persia made peace in 1828, ceding the provinces of Erivan and Nakchivan, and paying an indemnity of ten crores of *tomams**. McNeill was employed in the negotiations

between the Persian Court and the victorious Russian Commander, earning the complete confidence of both. At one time he had to borrow, on his personal responsibility, one crore of *tomams*, as an instalment of the indemnity, from the Shah. This sum was repaid by the Crown Prince, Abbas Mirza. McNeill was offered by the Czar the Cross of the second class of the Order of St Anne, and the first class of the Lion and Sun by the Shah, but was not allowed to accept either decoration.

The Envoy, Sir John Macdonald, died on 11th June 1830, Captain Campbell remained in charge, with McNeill as sole assistant, Dr. Cormick being medical officer, and in 1832 was confirmed as Envoy, the post having been declined by Major Stewart, of the Indian Army. In 1830, McNeill was appointed Resident at Bushire, but could not be spared from Teheran until December 1831, when he set out to join that post. He had got as far as Busrah, when his appointment was cancelled, and he returned to Teheran as assistant, having spent three months on a most toilsome and perilous journey, during which his unfortunate wife was confined of her fourth child, and having lost of all his allowances, about £375, for three months, during which he held neither post, as well as having expended over £1,000 on the journey.

In 1833, he received the first class of the Lion and Sun. Mrs. McNeill and her one surviving child left for England in June 1834, McNeill following on 26th September, travelling via Constantinople, Belgrade, Vienna, and Frankfort. While at home he wrote several articles on the Eastern question, in the *British and Foreign Review*, *Quarterly Review*, etc., and a pamphlet, "The Progress and Present Position of Russia in the East," which was published in English and French, in 1835, a second Edition being issued in 1854, at the beginning of the Crimean War.

Great changes happened in Persia about this time. The Crown Prince, Abbas Mirza, died on 21st October 1833, the Shah, Fateh Ali, on 23rd October 1834, his grandson, Muhammad Mirza, son of Abbas Mirza, succeeding to the throne. In December 1834, Mr. Ellis was appointed Envoy extraordinary to Persia, superseding Sir John Campbell. On 10th February 1835, McNeill was appointed Secretary to the Embassy, with dormant credentials as minister, but remained at home for another year, and on 5th June 1836 started for Persia as "Minister Plenipotentiary and Envoy extraordinary from the Court of St. James, to the Shah of Persia," with a salary of £6,000 a year. His staff comprised Captain Justin Sheil, Secretary to Legation, Captain Charles Stoddart, Military Secretary, Captain R. D. H. Macdonald, Commander of the Escort, Dr. James P. Riach, first Medical Officer, and W. Charles, W. Bell, Surgeon. All his staff were already in Persia. Travelling via Paris, Munich and Vienna, McNeill met Mr. Ellis, the returning Envoy, at Bayazid, on the Turkish

* In the Memoir (page 105) ten crores of *tomams* is said to be equivalent to two million pounds. But, taking the *tomam* as worth eight shillings, ten crores, i.e., one hundred million *tomams*, would be equivalent to forty million pounds.

Frontier, and presented his credentials to the new Shah on 11th December 1836. He had in the meantime retired from the Company's Service on 11th June 1836.

In 1837, Persia laid siege to Herat, a project to which McNeill was strongly opposed. The Afghans, aided by Lieut. General Pottinger, made a determined resistance, and the siege ended in failure. While Envoy in Persia, McNeill recommended that the British Government should recognize Dost Muhammad as Amir of Afghanistan, advice which, if it had been followed, might have averted the first Afghan War. In 1839, diplomatic relations with Persia came to an abrupt rupture. On 2nd January 1839, McNeill left for England, via the Caucasus and St. Petersburg. Colonel Sheil, who remained in charge, withdrew to Erzerum, and the other British officers were sent to Bagdad. Arriving in England early in March, he received the Grand Cross of the Bath. In June 1841, friendly relations with Persia being resumed, he set out again for Teheran, arriving in September. On this occasion Charles Scott, second son of Sir Walter Scott, accompanied him as assistant, but died on 28th October, a month after his arrival. On 7th May 1842 McNeill left Persia for good. On the journey home he met with a serious carriage accident, which nearly proved fatal, at Auch, in France. Colonel (afterwards Sir Justin) Sheil remained at Teheran, in charge of the Mission, and was soon afterwards confirmed as Envoy.

The first part of McNeill's career had now come to an end, but he was to serve his country, in other capacities, for many years. On 30th August 1845, the Scottish Poor Law Act was passed. A Board of Supervision was appointed with McNeill as Chairman, the other two members being Mr. Home Dummond and Sir George Macpherson Grant. This appointment he held for twenty-three years, resigning in March 1868 when he received a pension of his full salary, £1,200 a year. From 1852 to 1854 the Board were kept hard at work, arranging for emigration to Australia from the crowded crofts of the Western Islands.

In 1854, the Crimean War broke out. The British Army landed in the Crimea on 18th September 1854. Two days later the Allies defeated the Russians on the heights of the Alma, and shortly afterwards at Inkermann, after which began the siege of Sebastopol. A cyclone on 14th November devastated the British camp and destroyed many of the supply ships. Sheltered only in tents, many of which were rotten, and fed chiefly on salt meat and hard biscuit, without forage for the horses, or sufficient covering for themselves, the army suffered terribly from cholera, fever, and scurvy. These facts were widely published by Mr. (afterwards Sir William) Russell, the *Times* correspondent and caused great indignation in England. A motion for enquiry brought forward in the House of Commons by Mr. Roebuck, was carried by 127 votes, and

the Government resigned in February 1855. The reconstructed Cabinet resolved on several measures of improvement, one of which was the appointment of a Commission to enquire into the working of the Commissariat Department in all its branches, of supply and issue. Of this Commission Sir John McNeill was appointed Chief, the second Commissioner being Colonel Tulloch, Commandant of military pensioners in Great Britain. Neither of the Commissioners received any special pay as such, each continuing to draw the pay of the appointment he held at home.

The Commissioners reached Peru on 8th March 1855. Before this the worst was passed, but they had a difficult and unpleasant task before them. The chief wants were fresh meat and fresh bread. Colonel Tulloch started camp bakeries, Sir John at once made arrangements for obtaining supplies of meat, forage, fuel, and vegetables, from the southern shores of the Black Sea. The Commission took evidence for fifty-five days, examining the Commanding Officer, Surgeon and Quartermaster of every regiment in the Crimea, also a large number of superior and Staff Officers, from the Quartermaster-General, General (afterwards Lord) Avey downwards. They sailed from the Crimea at the end of May, and left Constantinople on 11th June. They presented to Lord Raglan, the Commander-in-Chief in the Crimea, and to Lord Panmure, the War Minister, a preliminary report, which was afterwards incorporated with the first report, dated 10th June 1855, and laid before Parliament, along with the second report, in January 1856. These reports were the cause of much acrimonious dispute at home, being attacked as exaggerated and incorrect, and a Board of General Officers was appointed to enquire into and report on their conclusions. In a debate in the House of Commons on 29th February 1856, their reports were much criticised, and scarcely defended by the Government, though warmly approved by General Sir De Lucy Evans, who had himself commanded a Division in the Crimea, and by Mr. Gladstone. Subsequently the Government offered the two Commissioners a sum of £1,000 each, as a truly recognition of their services, but this offer was declined by both. Finally, Sir John McNeill was offered the choice of a Baronetcy, or a Privy Councilorship, and chose the latter, while a K.C.B. was conferred on Colonel Tulloch.

Sir John continued to hold his post as President of the Board of Supervision up to March 1868. On 26th November 1868 Lady McNeill died. Two years later, on 26th August 1870, he married for a third time, his third wife being Lady Emma Campbell, sister of the Duke of Argyll. He died at Cinnis, aged 87, on 17th May 1883.

Sir John was not the only member of his family, who did good service to the State. His eldest brother, Captain Alexander McNeill, was

lost, with his wife and two daughters, in the wreck of the S S *Orion*, near Port Patrick, in June 1850. Two sons were saved, the elder of whom subsequently became Major-General Sir John Custans McNeill, V.C., Equerry to Queen Victoria. His second brother, Duncan, joined the Scottish Bar, and was successively Sheriff of Perthshire, Solicitor-General for Scotland, and sat on the Bench as Lord Colonsay. His third brother, Archibald, was a writer to the Signet in Edinburgh. The fourth, Brigadier-General Malcolm McNeill, of the Madras Army, fell a victim to sunstroke while leading the attack on Prome, in the second Burmese War, in 1852. John Wilson, better known by the pseudonym of Christopher North, was the eldest brother of his second wife.

Many members of the I.M.S., probably many of his own contemporaries, have been far more successful than Sir John McNeill, as far as the mere accumulation of money goes. But none we may fairly say has done better service to his country, or received higher rewards and honours. Certainly no other has filled the post of Ambassador, or received the Grand Cross of the Bath. Only one other, Joseph Hume, has attained the honour of membership of the Privy Council.

Yet, while he attained to high honours, and lived to extreme old age, Sir John's life was marked by many private sorrows. His first wife died two years after marriage, leaving one daughter who also died in childhood. His second wife, who shared his joys and sorrows for over forty-five years, predeceased him by fourteen years. Of the five children she bore him, four died in infancy and childhood. One daughter only, the youngest, reached maturity and married; she also died twelve years before her father.

D G C

II

A FEW NOTES ABOUT MELBOURNE AND ITS HOSPITALS

As I have recently had the great pleasure and privilege of spending some months in Melbourne visiting the Medical Institutions and seeing something of the work done in them, and as very little seems to be known by my brother-officers regarding the excellent way in which these hospitals are administered, I write this note in the hope that it may stimulate some to pay this fine city a visit, and thus combine a very pleasant and health giving holiday with the great advantage of being able to attend the really good Surgical and Medical Cliniques which are held in splendidly equipped up-to-date hospitals.

For a man—whether layman or professional—who has three months' leave in hand, and wants a complete change of scene and occupation I know of no trip which would repay him so well as one to Australia, for as soon as he steps on board the mail boat at Colombo for Perth he has left everything Indian behind, and is thrown into the stimulating society of men and women with

absolutely different thoughts and ideas to those which surround him in his Indian life.

A great advantage of such a trip is that—by leaving in April—one is able to avoid an Indian hot weather, enjoy the magnificent winter of Australia and get back to work when the rains have fully broken, as a rule the mail boats at this season—both going and returning—are never crowded, the steamers are luxurious, and the traveller can put in seven weeks in a land full of interest and instruction for anyone to whom is given the seeing eye.

To the non-professional visitor apart from a grand winter climate, everything is present to add to the enjoyment of this stay, excellent hotels and boarding houses (or private hotels, a great feature of Australian town life) where one can reside comfortably and economically. Good music, theatres with first class companies, where plays are staged in no way inferior to London. For the horseman—flat racing and steeple-chasing second to none, for the golfer—the best of Clubs, which by the courtesy of the members one can join on temporary terms, and the man who has not played at Sandringham has yet to learn the perfection to which links are brought. While to the more thoughtful the land has much to teach. The marvellous progress that has been made in town building and planning—in trade—in railway communications on navigation, and in public health administration within so short a span of years, fills one with wonder and amazement. The politician too is brought face to face with a comparatively new people deeply imbued with the sense of nationhood, who—while intensely loyal to the old country—are ever striving forward to the building up of that oversea nation which will take a leading place amongst the various nations and peoples who go to make up the far flung British Empire.

The hospitality of the Australian is proverbial, and I would here acknowledge many kindnesses received. I was made an Honorary Member during my stay in Melbourne of three of the leading Clubs. Nothing seemed too much trouble to friends, if it would lead to one's enjoying the visit and seeing the best of the country, and as for my professional brethren their welcome and the way in which they gave me access to the hospitals, and opportunities to see their work is one of the pleasantest memories I have carried away with me, and one which I shall never be able to forget.

Shortly after landing I met Colonel C. Ryan—often spoken of as "Plevna Ryan" having seen much service in the Russo-Turkish War. He is Inspector-General of the Medical Forces of Victoria, and Surgeon to The Melbourne Hospital, no welcome could have been kinder than his. At this time I also met Dr Kenny, Oculist and Aurist to The St. Vincent's Hospital. He once visited some of our hospitals in Calcutta and other centres, and also saw something of the great eye-work which Lt.-Colonel H. Smith was doing at

Jullunder Dr Kenny received me as a friend and brother, invited me to dinner at The Melbourne Club, where I met many leading men connected with the various hospitals, he spoke delightfully of his Indian experiences, and paid a very high tribute to the work being done by I M S men in India. At this dinner I met among others Drs A Norman McAithui and McAdam, the former is Gynaecologist to Inpatients at St Vincent's Hospital, the latter a leading practitioner whose kindness and hospitality much increased the pleasure of my visit.

Dr McAithui most generously invited me to accompany him on his hospital rounds, and to be present at his operations, I look back with pleasure to many hours profitably spent watching his numerous and varied operations so skilfully and rapidly carried out.

Melbourne is well equipped with hospitals, the chief ones being—

1. The Melbourne Hospital
2. The St Vincent's Hospital
3. The Women's Hospital
4. The Children's Hospital

The Melbourne Hospital is the largest, and leading general Hospital in Victoria, with at present 309 beds, its in-door practice and outdoor cliniques give ample material for the clinical training of students. During the year of my visit 5,544 in-patients and 21,606 out-patients were attended, the duly average of in-patients being 322 (extra accommodation being made). Thanks to the courtesy of Colonel C. Ryan, I was able to see something of the working of this institution, and be present at operations. The magnitude and usefulness of the work done here impressed me greatly. The buildings are old, and the wards and operation rooms are not up to present day standards but all this is now being remedied as the Committee of Management have about £150,000 in hand. This sum is to be spent on re-building on the present site, and they have wisely insisted on their Architect spending six months in visiting the leading European and American hospitals, so that they will be able to utilize all the latest and best methods in the arrangement and construction of their hospital. This sum does not include Architect's fees, furnishing, fittings, or instruments and equipment for the four new operating rooms.

When complete, the new Melbourne Hospital should be an institution of which all Australians might well be proud.

The St Vincent's Hospital—is managed by the Sisters of Charity, and is certainly one of the finest up-to-date institutions I have seen. The buildings,—which when rounded off and completed will be in architectural credit to Melbourne—include all modern improvements in hospital construction, and all known facilities for rendering the treatment of patients efficient and successful. The bright and cheerful wards provide that environment so necessary to the renewal of health and vigour, and its service is

placed at the disposal of sufferers of whatever creed or colour.

The various clinques deal with a yearly outpatient total of over 13,000, and 1,700 patients are annually treated in the wards. The operation list totals 1,477 for the year in which my visit was made, with a death percentage of 11.5. During my stay I was—by the courtesy of Mr T. P. Dunhill, one of the Surgeons of this hospital—enabled to see him remove under local anaesthesia some Thyroids for the treatment of Exophthalmic Goitre, an operation which he pioneered in Australia, and which has been so markedly successful in his hands.

Lack of space prohibits me from writing fully of the Women's and Children's Hospitals, but the work being done in them is of a very high order, and any medical traveller staying in Melbourne should certainly not fail to visit them.

If this brief note should induce any brother officer to take a trip to Australia, I shall be glad to give any additional information, and judging by my own experience he will never regret making the journey. In conclusion I can only hope I may have the opportunity of returning to my Australian travelling in India some of the hospitality extended to me while a visitor to their Homeland.

B. H. DEARE, M.R.C.P.,
MAJOR, I.M.S.

Correspondence

A MEDICO LEGAL QUERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"
SIR,—I should be much obliged by your kindly replying to the following queries in the columns of your esteemed periodical—

1. A causes grievous hurt to B either wilfully or accidentally. The latter does not want to report the matter to the police although the offence committed by A is cognizable. B calls his doctor, who may or may not be a private practitioner to be treated and ask him not to divulge the incident. Is the medical attendant right in complying with his patient's request?

2. A attempts to murder B who sustains either simple or serious injuries. The police are not informed. B's doctor is called to treat him and is perhaps the only witness of the offence committed. Is it the duty of the medical man to inform the police whether or not the patient or his friends want the matter to be known by the police?

3. A after receiving grievous hurt in a fight with B comes to hospital to be treated without the knowledge of the police. Is it the duty of the medical officer in charge of the hospital to inform the police whether or not A is anxious to have the matter reported?

MEDICO LEGAL

CONTENTS OF A HERNIAL SAC

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I read with interest Colonel Jennings note in the contents of a hernia.

On 24th September I did a radical cure in a left strangulated inguinal hernia in a Chinese boy about 18 months old.

The hernia contained the cæcum and a very long vermiform appendix. The case did well.

MANDALAY
November, 1910 }

Yours faithfully,
A. FENTON,
MAJOR, I.M.S.

CÆCUM IN LEFT INGUINAL HERNIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

In the October (Surgical) number of the *Indian Medical Gazette*, Colonel Jenning reported a case of left inguinal hernia with cæcum in its sac and invited reports of similar cases, if met with in the practice of others. The following case may therefore be of some interest.

Hazim, M. M., at 65, was admitted into the Mayo Hospital, Calcutta, on 23rd August 1910, with a big scrotal swelling, reaching down to near the knees, made up of a small right hydrocele ('of 20 years') and a left inguinal hernia (15 years) which had much increased in size during the last 5½ months and had remained putty irreducible since. On the 26th August 1910 I (1) excised the large and thickened scrotum, (2) everted the tunica of the right hydrocele, (3) castrated the left testis (which was diseased, large and heavy and contained a much turbid fluid) and (4) dealt with the hernia—the sac was dissected out, opened and contents reduced with gentle coaxing, ligatured at the internal ring, the distal portion being excised and removed, and the stump anchored to the muscular abdominal wall and the external ring closed up—all done through, and by retraction of the scrotal wound. Catgut No. 1 was used for stump and cord.

The contents of the sac were (1) much congested coils of the lower end of ileum (2) cæcum with a thickened appendix and (iii) there were some small floating flakes of lymph and one was a thin white small bladder like cyst, containing fluid, which was lying amongst the coils and tore off easily. The cæcum had a small ulcer like punched out excavation on its outer wall, which was cleaned and wiped dry and stitched up with a Pagenstecher suture.

Owing to, it must be, to the peculiar idiosyncrasy of the patient, respiration had, contrary to the usual experience stopped eight times during the operation, which was somewhat hampered thereby.

Subsequent progress was satisfactory. (a) General was all right in the first evening, felt sickish but there was no vomiting, flatus was free from second day but the left iliac region was somewhat full and irritable still had no pain and no complaints on the third day and no trouble since, (b) Temperature was 99 and 99 ¼ on the first and second evenings respectively and normal since, (c) Wound was first dressed on the seventh day and was found dry and a few stitches removed, the remaining were removed on the twelfth day. He left the Hospital cured on the 9th September 1910, the fifteenth day after operation.

My thanks are due to Colonel Maynard, M.S., Surgeon Superintendent, for permission to publish this case.

MAYO HOSPITAL } Yours &c,
Calcutta, November 1910 } D. N. MAITRA, M.B.

THE VALUE OF EUCALYPTUS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—With reference to Lieutenant G. G. Jolly's article on a case of "Poisoning by Eucalyptus Oil," I hasten to correct the impression left by his concluding paragraph.

I have been using the Chloroform and Eucalyptus treatment for ankylostomiasis in my tea garden hospitals for the last four years. I give 50 of Chloroform and 35 of Eucalyptus in two divided doses with most excellent results as regards the expulsion of the worms and have never seen among some hundreds of cases, one that gave rise to serious anxiety, and have had no fatality. Occasionally weakly and bily anaemic coolies suffer from giddiness, and rapidity of pulse and respirations but they usually sleep it off satisfactorily. I always order that the amount is to be given in three divided doses for weakly people with the happiest results.

I also find that this treatment may be given to women in an advanced state of pregnancy without much fear of precipitating labour, which B. nephthol and thymol especially are apt to do.

I cannot understand Lieutenant Jolly's unfortunate experience.

Yours, &c.,
BISHNAUTH, } F. C. P. COMBIE, M.B. (LOND.)
ASSAM } Medical Officer, Bishnauth

THERAPEUTIC NOTICES

THE fine exhibit of Burroughs Wellcome & Co., of the London Medical Exhibition occupied a commanding position at the corner of a central block. Many curious and interesting pharmaceutical products were on view. A new antiseptic dressing which will interest gynaecologists and surgeons generally was shown. This is 'Tabloid' Bismuth Gauze concerning the germicidal properties of which most en-

couraging clinical reports have been received. Every pie caution is taken to render this preparation aseptic right up to the moment when it is used. The yard rolls made in one two and three inch widths, are sterilised and enclosed in varnished germ proof covers.

A very convenient method of packing 'Wellcome' Brand Chloroform was noticeable. It consists of an amber coloured hermetically sealed tube, so constructed that the capillary portion can be fractured with ease and certainty. The tube after opening can be used as a drop bottle, the orifice being covered by embedding the point in a cork. This brand of chloroform is peculiarly free from irritating impurities such as the dissolved chlorine, hydrochloric acid and phosgene too frequently found in crude varieties.

Apparatus for the preparation of a pure neutral chloride of ammonium vapour in a few moments and without the necessity for carrying about bottles of strong acid has long been a desideratum. In the 'Vapoole' Ammonium Chloride Inhaler a very handy equipment is provided for the purpose. Instead of bottles the acid and alkaline reagents are supplied in hermetically sealed glass capsules surrounded by gauze and the whole outfit may be carried quite conveniently in the pocket.

'Pyritine' presents in a convenient form the organic base which is the chief active ingredient of aqueous extracts of ergot. Prominent among the exhibits at the Allahabad Exhibition are those of Messrs. Burroughs Wellcome & Co.

We have received the following report of certain feeding experiments made in the School of Physiology, Trinity College, Dublin.—In order to secure a decisive test dogs were first brought to a constant weight on dried dog biscuit mixed with known quantities of water. Bovil—from 2½ to 7½ grammes—was then added to the food, with the result that the weight of the animals went up as much as 50 to 100 grammes or, in round numbers, 10 to 20 times the weight of the Bovil given.

Afterwards Bovil was discontinued and the animals fell back to the original weight. Compared with the effect of half boiled white of egg, it was found that from 8 to 10 times as much by weight of the latter had to be given to obtain the same increase in weight, or, taking the dried organic solids in the two foods, from 2½ to 4 times as much egg white had to be given to obtain the Bovil effect.

In several of the experiments there was a retention of reserve nitrogen, and in all an increased utilisation of other foods.

It was therefore concluded that Bovil had both a direct and an indirect nutritive value the latter by causing a more complete digestion and absorption of the other food given.

WATERMAN'S IDEAL FOUNTAIN PEN we certainly think deserves the name "Ideal," we have tried many fountain pen but have found the Waterman's by far the most reliable. It is simple and easily filled and cleaned and we can thoroughly recommend it.

Experiences with BROMURAL KNOLL by Dr. O. Schaefer, Berlin. From the Foestschule der Medizin 1910 No. 23 Bromural was administered in a few cases of Neuralgia, neuroses of the heart and blood vessels, and in Angina pectoris details of which are furnished. The excellent results which the author was able to record in these and similar cases encouraged him to order it in diseases which were attended by insomnia, owing either to accompanying pain or associated irritability. He used it in cases of fractures, traumatic concussion and menstrual disturbances in the latter instances it served to suppress the pain of gonorrhœa.

Bromural appears to act indirectly as a pain relieving remedy, owing to its sedative effect on the nervous system. The importance of this cannot be exaggerated in view of the objection of many patients to take specific hypnotic drugs. The author never observed any kind of untoward action of Bromural.

Those of our readers who intend to visit the Allahabad Exhibition will probably be interested in the Westinghouse Ultra Violet Ray STERILIZER for Water. This appears to be admirably adapted for hospital or jail use and an installation may be seen at Messrs. Smith, Smithfield & Co's Stall in the Municipal and Hygiene Court at the Exhibition.

Service Notes

CAPTAIN WILLIAM MALCOLM THOMSON of the Indian Medical Service resigned on 19th July, 1910. He was born on 29th July, 1878, educated at Otago University in New Zealand, where he took the degrees of M.B. and Ch.B. in 1905, and entered the I.M.S., as Lieutenant on 1st September 1906, becoming Captain three years later. The Army List assigns him no war service. He was the only man in the I.M.S. who held a New Zealand degree.

BRIGADE SURGEON JOHN ALBERT ANDERSON, P A M C, retired, died at his residence, 9, Hulley Street, London, on 10th October 1910, aged 70. He was born in 1840 educated at Queen's College, Manchester, and took the diplomas of M R C S in 1861 and L S A in 1862, also subsequently the M D St Andrews in 1885, the M R C P London in 1885, and was elected F R C P in 1896. Entering the A. M. D as Asst Surgeon on 1st October 1867, he became Surgeon on 1st July 1873, and Surgeon Major on 1st October 1870, retiring with a step of Honorary rank on 13th November 1887. He served in India from 1880 to 1884 as Surgeon to the Vice-Admiral, Lord Ripon and was made a C I E on 24th May 1881. After his retirement he started in practice in London, and was lecturer in Tropical Diseases at St Mary's Hospital, as well as Physician to King Edward's Hospital for Officers and the Dreadnought Seamen's Hospital, Greenwich. He served in South Africa in 1879, in the Zulu war, and was present at the battle of Ulundi, receiving the medal with clasp. His wife died on August 10th 1910, just two months before him.

SURGEON COLONEL FRANCIS HENRY WILCH, R A M C, retired, died at Southborough on October 1910, aged 70. He was educated at the London Hospital, and took the diplomas of M R C S and L S A in 1860 also subsequently the F R C S, England, in 1871, and the D P H Cambridge in 1886. Entering the A M D on 1st April 1861 as Asst Surgeon, he became Surgeon on 1st March 1873, Surgeon Major on 10th March 1876, Brigade Surgeon on 24th February 1887, and Surgeon Colonel on 5th April 1892, retiring on 1st May 1895. He served in the Hazara Expedition of 1888 being mentioned in despatches. From 1871 to 1876 he held the post of Assistant Professor at Netley, but the only officer now serving in the I M S who can have been at Netley with him is Surgeon General Benson. He twice won the Alexander Gold medal in 1873, with an essay on tuberculosis in the Army, and with one on enteric fever in 1882.

On his return from Lahore Captain A C MacGilchrist, I M S, acted as Civil Surgeon of Mozaffarpore during the absence of Major A C Chatteerton, I M S, on short leave.

CAPTAIN C L DUNN, I M S, was posted to Jullundur District on plague duty, 16th August 1910.

LIFUTENANT COLONEL J R ADRI, I M S, is placed on special duty for malaria investigation.

The undermentioned officer is granted privilege leave for two months and fifteen days combined with furlough out of India for five months and fifteen days, under the leave rules of 1886 for the Indian Army—the specified period to count from the date of being struck off duty.

Captain F N White, M D, I M S, on special duty under the orders of the Sanitary Commissioner with the Government of India Pension service, eighth year, commenced 31st January 1910.

The Home Department Notification No 1159, dated the 4th July 1910 is hereby cancelled.

CAPTAIN W J POWELL, M A, I M S, on return from furlough is appointed to act as Superintendent, Central Jail, Jubbulpore, C P.

CAPTAIN F W SOWERBY, I M S Civil Surgeon, Bijnor, was on special duty at Naini Tal, during September.

MAJOR G HUTCHESON, I M S and Major A W R Cochran, F R C S, I M S, on completion of a course at Kisauli revert to their appointments.

CAPTAIN A S LESLIE, I M S, Superintendent Insein Central Jail, was granted one month's privilege leave in October.

MAJOR F N WINDSOR, I M S has been transferred from Rangoon to Calcutta as Chemical Examiner, Major J Black has gone to Lahore as Colonel D G S J Grant, I M S promoted, and Captain Owen has gone to Rangoon as Chemical Examiner.

MAJOR P ST C MOFF, I M S, made over charge of the Campbellpur Jail to Lala Gudori Lal on 14th September.

CAPTAIN G KING, I M S, acted as a Civil Surgeon of the second class and was posted to Bilaspore, with effect from the forenoon of the 18th July to the forenoon of the 29th August 1910, during the absence, on leave of Dr P A Rigby.

CAPTAIN G KING, I M S, is appointed to act as a Civil Surgeon of the second class and is posted to Midnapore with effect from the forenoon of the 7th September 1910.

CAPTAIN L COOK, I M S, reported his departure from India on leave on the 10th September 1910.

ASSISTANT SURGEON BABU SATISH CHANDRA BANERJEE (II), attached to the Muzaffarpur Charitable Hospital, held medical charge of the civil station of Muzaffarpur, in addition to his own duties from the forenoon of the 23rd to the forenoon of the 26th September 1910 during the absence, on leave, of Major B R Chitterton, I M S.

LIFUTENANT COLONEL A W DAWSON, I M S, is appointed to hold civil medical charge of Roorkee, in addition to his military duties vice Major E M Moiphew, R A M C.

HONORARY CAPTAIN J PRENTIF has been granted six months' extension of leave in England on medical certificate.

CAPTAIN G FOWLER, D PH, D T M, Civil Surgeon, Akola, was deputed to attend the malaria class at Amritsar.

MILITARY ASSISTANT SURGEON R T RODGERS acted as Civil Surgeon, Akola.

MAJOR P ST C MORF, I M S, had six weeks' privilege leave from 14th September 1910.

CAPTAIN E J C McDONALD, I M S, rejoined his appointment as Plague Medical Officer, Sialkot, on 11th September 1910.

LALA MAYA DASS made over charge of the duties of Superintendent Ambala district jail to Major A W T Bust, I M S, on the forenoon of the 26th September 1910.

LALA KHAZAN CHAND made over charge of the duties of the Superintendent, Jhang district jail to Ru Sihib Lillacharan Dass on the afternoon of the 5th October 1910.

CAPTAIN W W JEWEDWINE, I M S, made over charge of the duties of Superintendent, Shihpuri jail, to Major G M C Smith, I M S, on the forenoon of the 4th October 1910.

MAJOR J W RAIT, I M S, has gone on one year's sick leave and Captain Copperger, I M S acts as Civil Surgeon of Hooghly.

MAJOR S H BURNETT, M B, C M, I M S, is granted, from the 1st October 1910 or subsequent date of relief such privilege leave of absence as may be due to him on that date, and one year's study leave, in combination with furlough for such period as may bring the combined period of absence up to two years.

HIS Excellency the Governor in Council is pleased to appoint Lieutenant Colonel J Cummin, V C, (I F D M), I M S, to act as Presidency Surgeon Second District, with attached duties in addition to his own duties, as a temporary measure vice Major S H Burnett, M B, C M, I M S, proceeding on leave, pending further orders.

MAJOR V B BINFETT, M B, B S, F R C S, I M S, has been allowed by His Majesty's Secretary of State for India in extension of furlough by seven days.

HIS Excellency the Governor in Council is pleased to appoint Captain W D Wright, V B, I M S, to act as Civil Surgeon Ahmednagar, in addition to his military duties, vice Lieutenant Colonel J B Jameson, V B, C M, I M S, pending further orders.

FURLOUGH and Leave—Officers.—The attention of all concerned is directed to the note to paragraph 360, Army Regulations India, Volume I under which an officer under the 1886 Leave Rules for the Indian Army who has already taken an undue amount of leave on account of his health should not be granted any specified period of leave out of India on medical certificate. Such cases should be specially reported to His Excellency the Commander-in-Chief, the officer being merely permitted to leave India, pending the orders of the Government of India or of the Secretary of State.

THIS procedure will be followed in all cases of mental disorder subject to the instructions contained in Army Regulations, India, Volume VI, paragraphs 88 and 89.

THE services of Captain C R O'Brien, V B, I M S, are placed permanently at the disposal of the Government of Eastern Bengal and Assam, with effect from the 1st September 1910.

MEDICAL Department—Subordinates—With the approval of the Right Hon'ble the Secretary of State for India, the Government of India are pleased to decide that the title "Military Sub Assistant Surgeon" should be adopted in future in lieu of that of "Military Hospital Assistant".

CAPTAIN T F OWENS, I M S, whose services have been placed at the disposal of the Government of Burma, is appointed with effect from the date on which he assumes charge of his duties, to officiate as Chemical Examiner and Bacteriologist, Burma, in place of Major F N Windsor I M S, whose services have been replaced at the disposal of the Government of India.

CAPTAIN A E GRISWOOD, I M S, is appointed District Plague Medical Officer, Hoshnarpur, relieving Captain H Watts, I M S, who goes on leave.

CAPTAIN E J C McDONALD, I M S, is posted to Jhelum, vice Captain S B Mehta, I M S, transferred.

MAJOR A W T BUIST I M S, on return from leave is posted to Ambala as Civil Surgeon relieving Assistant-Surgeon Maya Das.

MAJOR E L WARD, I M S, made over charge of the duties of the Superintendent, Lahore District and Female Jails, to Captain R A Chambers, I M S, on the forenoon of the 3rd October 1910.

LIEUTENANT COLONEL W H QUICKE, F R C S I M S, has been allowed by His Majesty's Secretary of State for India to return to duty within the period of his leave.

LIEUTENANT COLONEL L F CHILDE, M B I M S has been allowed by His Majesty's Secretary of State for India an extension of furlough on private affairs by two days.

MAJOR T JACKSON, M B B S, I M S, has been allowed by His Majesty's Secretary of State for India to return to duty.

IN Government Notification No 4841, dated the 1st October 1910, granting combined leave of absence for one year and four months to Captain L P Stephen, M B D P H, I M S, for 7th November 1910, read 4th November 1910.

CAPTAIN E OWEN THURSTON, I M S, has gone on leave, and Lieutenant Colonel Jordan, I M S, has gone to Monghyr as Civil Surgeon on return from furlough.

IN supersession of notification No 14105-B 5 dated the 21st September 1910, published on page 1053 Part I, of *United Provinces Gazette* of the 24th September 1910, Major H G Smith, I C S to hold executive charge of Fatehgarh Central Prison, in addition to his own duties, during the absence, on privilege leave, of Lieutenant Colonel E Jennings I M S and Captain H R Nutt I M S, to hold medical charge of Fatehgarh Central Prison in addition to his own duties, during the absence, on privilege leave, of Lieutenant Colonel E Jennings, I M S.

IN modification of this department notification No 6683, dated the 15th August 1910 Civil Assistant Surgeon Lachmi Nain Rai attached to the Sadi Dispensary, Bijnor, held civil medical charge of district in addition to his own duties, vice Captain F W Sumner I M S, on special duty at Naini Tal, from the 1st to the 30th September 1910.

CAPTAIN C DIKES, I M S, Civil Surgeon has been granted by His Majesty's Secretary of State for India, extension of ten days' leave on private affairs.

CAPTAIN C DIKES, I M S, Civil Surgeon, on return from leave, to Jaunpur.

MAJOR J M CRAWFORD, I M S, Civil Surgeon, on return from leave, to Benares.

MAJOR H J WAITON, I M S, Civil Surgeon, on return from leave, to Bulandshah.

LIEUTENANT COLONEL J K CLOSE, I M S, Civil Surgeon of Benares, on being relieved, privilege leave, combined with furlough, for a total period of seven months.

LIEUTENANT COLONEL J J PRATT, I M S, Civil Surgeon of Lucknow privilege leave, combined with furlough on medical certificate, for a total period of eighteen months, from the 14th November 1910.

MAJOR W SELBY, I M S, Civil Surgeon, from Gorakhpur to Lucknow.

MILITARY ASSISTANT SURGEON F W MATHEWS, Official Civil Surgeon, Etah, to Basti, vice Dr H A Macleod, granted leave.

MILITARY ASSISTANT SURGEON H J J GARROD, Official Civil Surgeon, from Jalaun to Etah.

MAJOR R G TURNER, I M S, Civil Surgeon, from Silanpur to Gondia.

LIEUTENANT COLONEL R J MARKS, I M S, Civil Surgeon, on return from leave, to Gorakhpur.

MAJOR F A L HAMMOND, I M S, was granted by His Majesty's Secretary of State for India study leave from the 1st May to the 31st August 1910.

LIEUTENANT COLONEL R H CASTOR, I M S, was granted by His Majesty's Secretary of State for India an extension of leave on private affairs for five days.

LIEUTENANT COLONEL R H CASTOR, I M S, has been permitted by His Majesty's Secretary of State for India to return to duty within the period of his leave.

MAJOR A LEVENTON, I M S, has been posted to Dibingath as Civil Surgeon.

ON return from the combined leave granted to him in Punjab Government notification No 625, dated the 21st of July 1909, and subsequently extended by His Majesty's Secretary of State for India as notified in Punjab Government notification No 348, dated 26th April 1910, Lieutenant Colonel H Hendley I M S, assumed charge of the duties of Civil Surgeon, Lahore, Professor of Forensic Medicine and Toxicology, Medical College, and Medical Officer of the Government College, Lahore, on the forenoon of the 22nd October 1910, relieving Lieutenant Colonel J A Cunningham, I M S whose services have been placed at the disposal of the Government of India, Home Department.

WITH reference to the notification of the Government of India in the Home Department, No 1219, dated the 3rd of November 1910 Major J A Black, I M S, assumed charge of the duties of Chemical Examiner to Government, Punjab, and Professor of Chemistry, Medical College, Lahore, on the forenoon of the 4th November 1910 relieving Senior Assistant Surgeon Rui Sahib Guian Ditt, Major Assistant Chemical Examiner to Government, Punjab, of the additional charge.

ON return from the combined leave granted to him in Punjab Government notification No 750, dated the 22nd of September 1909, Major G F W Evans I M S, reported his arrival at Bombay on the 5th October 1910, and resumed charge of his duties as Superintendent, Punjab Lunatic Asylum, Lahore on the forenoon of the 11th idem, relieving Captain A S M Peebles, I M S, whose services have been replaced at the disposal of the Government of India, Home Department.

ON return from the furlough granted to him in the Government of India, Home Department, notification No 291, dated the 24th of March 1910 Major E V Hugo I M S, resumed charge of the duties of Professor of Surgery, Medical College, Lahore, on the forenoon of the 16th June 1910, relieving Major H Ainsworth, I M S, Professor of Ophthalmology, of the additional charge.

CAPTAIN D H F COWIN, I M S, made over charge of the duties of Superintendent of the Multan district jail to Lieutenant Colonel A Coleman, I M S, on the forenoon of the 4th November 1910.

THE appointment of Major F O'Kinealy, I M S, as Surgeon to H E the Viceroy is gazetted with effect from 23rd November 1910.

MAJOR O'KINEALY, we understand, is permitted to take consulting practice.

BRFVET COLONEL JOHNSTON SHEARER C B, I M S, is permitted to retire with effect from 6th December 1910.

THE report that Sir P Manson had resigned his appointment as Medical Adviser to the Colonial Office is untrue. We are glad to be able to state that Sir Patrick Manson has recovered from a prolonged gouty attack and resumed his duties early in November last.

THE staff of the Medical College, Calcutta, under the presidency of Colonel G F A. Harris, I M S, M D, F R C P, gave a farewell dinner to Mr Rainger who is retiring and going home after having been for many years Professor of Dentistry in the Medical School, Calcutta.

CAPTAIN A S M PEEBLES, I M S, has been appointed Specialist in Mental Science, Northern Army, with effect from 17th October 1910.

MILITARY ASSISTANT SURGEON J A F HARVEY was granted six weeks' privilege leave, with effect from 1st December 1910.

ON return from furlough Lieutenant Colonel Andrew Buchanan, I M S, returns to Amritsar as Civil Surgeon.

THE services of third class Assistant Surgeon K W Blinkworth, I M D, are placed at the disposal of the Government of Eastern Bengal and Assam, for civil employment in that province, with effect from the 30th September 1910.

THIRD CLASS MILITARY ASSISTANT SURGEON K W BLINKWORTH, I M D, is appointed to hold medical charge of the Lungleh subdivision and dispensary in the Lushai Hills.

MAJOR A LEVENTON, I M S, is appointed Civil Surgeon, Lucknupur during the absence, on deputation, of Lieutenant Colonel E R W C Curroll, I M S, or until further orders.

THE services of Captain A W Overbeck Wright, M B, I M S are replaced at the disposal of the Government of India in the Home Department, with effect from the date on which he is relieved by Major E R Puly, M P, I M S.

THE services of Captain M Cory, I M S, are placed permanently at the disposal of the Punjab from 12th July 1910.

THE King has approved of the promotion of the following Officers of the Indian Medical Service To be Lieutenants
Dated 29th January, 1910

Francoise Jimsetjee Kolaporewalla
Edward Galwey Kennedy, M B
Robert Forrester Douglas MacGregor, M B
Arthur Lewin Sheppard, M B
Paul Knighton Gilroy, M B
Joseph Athlone Alexander Kernahan
Maurice Lionel Colle Irvine, M B
Ernest William O'Gorman Kiwan, M B
John Valentine Macdonald, M B
George Lawrence Duncan, M B
Anup Nath Palit, F R C S E
Hubert Alan Hirst Robson, M B
Kalyan Kumar Mukherjee
Cecil George Howlett, M B

CAPTAIN ARTHUR ANDERSON MCNIGHT, M B, Royal Army Medical Corps, has been admitted to the Indian Medical Services by exchange with Captain R K White
Dated 11th July 1910.

MAJOR T S ROSS, I M S, is sub pro tempore Surgeon, 4th District, Madras.

CAPTAIN L HIRSCH, I M S, acts as third Surgeon, General Hospital, Madras.

CAPTAIN E A ROBERTS, I M S, is due back from furlough on 10th January 1911.

CAPTAIN P HEFFERNAN, I M S has been appointed acting Lecturer on Mental Diseases Medical College, Madras.

CAPTAIN W C GRAY, I M S acts as Lecturer on Midwifery to female students, Medical College, Madras.

CAPTAIN S D MEHTA, I M S, is transferred as Plague Medical Officer to Lyallpur.

THE services of Captain A C MacGilchrist, I M S, officiating Professor of Materia Medica, Medical College, Lahore, are replaced at the disposal of the Government of India in the Home Department, with effect from the forenoon of the 21st of September 1910. Capt MacGilchrist has gone to Jeddah as Civil Surgeon.

On return from the furlough granted to him in the Government of India, Home Department, notification No 1186, dated the 24th of September 1909, Major D W.

Sutherland I M S reported his arrival at Bombay on the 18th September 1910, and assumed charge of his duties as Principal and Professor of Medicine and Diseases of Children, Medical College, Lahore on the forenoon of the 21st idem, relieving Major H G Melville, who reverted to his substantive appointment of Professor of Materia Medica relieving Captain A C MacGilchrist, I M S, whose services have been replaced at the disposal of the Government of India, Home Department.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major V B Bennett, M B, B S, F R C S, on return to duty, to act as Senior Surgeon J J Hospital, vice Major S Evans, M B, I M S, pending further orders.

MAJOR H J WALTON, I M S, Civil Surgeon of Bulandshahr, is placed on special duty in connection with United Provinces Exhibition at Allahabad, from the 20th November 1910 to the 7th December 1910, both days inclusive.

CIVIL ASSISTANT SURGEON DALIP SINGH KATWAL, attached to the said dispensary at Bulandshahr, to hold civil medical charge of the district, in addition to his own duties, vice Major H J Walton, I M S, placed on special duty.

LIEUTENANT COLONEL F J DRURY, I M S, Principal and Professor of Medicine, Medical College, Calcutta, and First Physician to the College Hospital, is attached for a period of two months to the office of the Principal Medical Officer, His Majesty's Forces in India, with effect from the 20th November 1910.

LIEUTENANT COLONEL J T CALVERT, I M S, Professor of Materia Medica, Medical College, Calcutta, and Second Physician, College Hospital, is appointed to act as Principal and Professor of Medicine Medical College, Calcutta, and First Physician to the College Hospital, during the absence, on deputation, of Lieutenant Colonel F J Drury, I M S, or until further orders.

MAJOR J G P MURRAY, I M S, is, on return from leave, appointed to act as Professor of Materia Medica, Medical College, Calcutta, and Second Physician College Hospital, during the absence, on deputation, of Lieutenant Colonel J T Calvert, I M S, or until further orders.

DR P A RIGBY, Civil Surgeon, Balasore, is allowed leave on medical certificate for two months and nineteen days under article 336 of the Civil Service Regulations, with effect from the 18th July 1910.

CAPTAIN J F BOYD, I M S, is appointed specialist in Prevention of Disease at the Bannu Brigade Laboratory.

MEDICAL DEPARTMENT—SUBORDINATES—With reference to paragraph 7, Appendix II Army Regulations India, Volume VI, the Government of India have been pleased to fix the penalties to be exacted from a Military Assistant, Surgeon or Sub Assistant Surgeon of the Indian Subordinate Medical Department, on resignation within three or seven years, respectively, from the date of entering the service, at Rs 1,400 in case of the former, and at Rs 500 in the case of the latter.

ON his return from leave Lieutenant Colonel A O Evans, I M S, is posted to the Civil Surgeoncy at Maymyo in place of Captain R E Wright, I M S.

MR T SABASTIAN, M D (Brussels), L R C P & S (Edin), D P H (Dub), and D T M (Liverpool), is appointed temporarily as a Third Grade Civil Assistant Surgeon in Burma, with effect from the date he assumes charge of his duties.

LIEUTENANT COLONEL R H CASTOR, I M S, on return from leave is appointed to the civil medical charge of the Shwebo District in place of Lieutenant Colonel F J Denes, I M S, proceeding on leave.

UNDER the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations, privilege leave for three months with furlough in continuation thereof for one year and nine months is granted to Lieutenant Colonel F J Denes, I M S, Civil Surgeon Shwebo with effect from the date on which he may avail himself of the privilege leave.

THE services of the undermentioned officers are placed permanently at the disposal of the Government of Madras—

Captain F C Rogers, I M S
Captain S A Ruzzak, I M S

MAJOR J A BLACK, M B, I M S, is appointed to officiate as Chemical Examiner, Punjab, and Professor of Chemistry in the Medical College, Lahore, during the absence on deputation of Lieutenant Colonel D St J D Grant, M B, I M S or until further orders

MAJOR F N WINDSOR M B, I M S, is appointed to officiate as Chemical Examiner Bengal, and Professor of Chemistry in the Medical College, Calcutta, during the absence on deputation as Chemical Examiner Punjab and Professor of Chemistry in the Medical College, Lahore, of Major J A Black, M B, I M S or until further orders

MAJOR F A SMITH, I M S, has been granted combined leave for eight months from 12th October 1910

MAJOR J N MACFOD, C I E, I M S, on return from furlough, has been posted to Quetta as Civil Surgeon

CAPTAIN L J M DEAS, Indian Medical Service, an officiating Agency Surgeon of the 2nd class is granted privilege leave for two months and nineteen days, combined with furlough for five months and four days, and study leave for eight months with effect from the 1st October 1910, under Articles 293 and 308 (b) of the Civil Service Regulations and the Regulations prescribed in the notification by the Government of India in the Army Department, No 25, dated the 7th January 1910

MAJOR F D S FAYRER, Indian Medical Service, an officiating Agency Surgeon of the 2nd class, is posted on return from furlough as Civil Surgeon of Dei Isrul Khan, with effect from the 8th October 1910

LIEUTENANT COLONEL J SHEARER, D S O, C B, P M O, Dejarat and Bannu Brigades is gazetted to be Brevet Colonel, dated 11th November 1910

This is a new and excellent departure and one deserving of a much wider application

THE following changes are sanctioned among Agency Surgeons under the Foreign Department —

Consequent on the retirement from the service of Lieutenant Colonel G H D Gimlette, C I E, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, and with effect from the 1st April 1910 —

Captain R McCarrison, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd class

Consequent on the retirement from the service of Lieutenant Colonel P D Pink, Indian Medical Service (Bengal), an Agency Surgeon of the 1st class, and with effect from the 17th May 1910 —

Lieutenant Colonel J R Roberts Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, to be an Agency Surgeon of the 1st class

Captain C M Goodbody Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd class

Consequent on the replacement at the disposal of His Excellency the Commander in Chief in India of the services of Lieutenant Colonel G W P Dennis, Indian Medical Service (Bengal), an Agency Surgeon of the 1st class, and with effect from the 25th May 1910 —

Lieutenant Colonel A L Duke, Indian Medical Service (Bengal), to be confirmed as an Agency Surgeon of the 1st class and Administrative Medical Officer in the North West Frontier Province

Captain W M Anderson, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd class

Consequent on the seconding of Lieutenant Colonel R Shore, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, and with effect from the 11th November 1910 —

Captain L J M Dens, Indian Medical Service, to be confirmed as an Agency Surgeon of the 2nd class

Lieutenant Colonel W H Quick, F R C S, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on medical certificate for three months

MAJOR G MC C SMITH, I M S, is posted to Shapur as Civil Surgeon, vice Captain W W Jeudwine, I M S, going on leave

CAPTAIN W W JEUDWINE, I M S, was granted 29 days' leave from 4th October 1910

MILITARY ASSISTANT SURGEON E F HOTINGFP is posted to Gurgun as Civil Surgeon

LIEUTENANT COLONEL W VOST, I M S, has been granted three months special leave on urgent private affairs

MILITARY ASSISTANT SURGEON T J F DUNN has been appointed Assistant to the Civil Surgeon of Mussoorie

CAPTAIN CAMPBELL DYKES, I M S, is transferred as Civil Surgeon to Saharanpur

MILITARY ASSISTANT SURGEON G A S HOWATSON, Officiating Civil Surgeon, is confirmed as Civil Surgeon, with effect from the forenoon of the 25th September 1910, vice Captain G T Milchem, retired

MILITARY ASSISTANT SURGEON H J J GARROD, Officiating Civil Surgeon, is confirmed as Civil Surgeon, with effect from the forenoon of the 3rd November 1910, vice Captain W Heathcock, retired

The Lieutenant Governor is pleased to appoint Major C S Brumby I M S, Superintendent, General Hospital, Rangoon, to be a member of the Educational Syndicate in place of Major J Penny, D P H, I M S, who is deemed to have resigned in accordance with Article 7 (2) of the Rules and Regulations of the Burma Educational Syndicate

Under the provisions of Article 260 of the Civil Service Regulations, privilege leave for three weeks is granted to Captain A Whitmore, M B, I M S, police surgeon and pathologist of the Rangoon General Hospital, with effect from the 1st November 1910 of such date as he may avail himself of the leave

LIEUTENANT COLONEL H B MEVILLE M B, Indian Medical Service, Civil Surgeon, Simla East to the medical charge of Army Headquarters Staff and establishments remaining at Simla during the winter, with effect from 1st November 1910

CAPTAIN S R GODKIN I M S, is appointed specialist in (c) Advanced Operative Surgery in the 6th (Poona) Division, with effect from the 26th October 1910

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messis Thacker, Spink & Co, Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messis Thacker, Spink & Co, Calcutta

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad

BOOKS, REPORTS, &c, RECEIVED —

- Hewlett's Vaccine Therapy (J & H Churchill)
- Proceedings Royal Society of Medicine Vol III, 9 & 9a
- Dingwall's Hygiene of Infancy (E & S Livingstone)
- Philosophies By R Ross (J Murray)
- Gaucher's Disease of the Skin (John Murray)
- Ronald Ross Prevention of Malaria (John Murray)
- After results of Abdominal Operations (Baillière Tindall & Cox)
- Aaron's Gyneacological Therapeutics (Baillière, Tindall & Cox)
- Whittaker's Manual of Surgical Anatomy
- Indian Museum Reports
- Caldwell's Military Hygiene (Baillière Tindall & Cox)
- Stewart's Physiology Sixth Edition
- Han's Laboratory Notes on Organic Chemistry
- Dufferin Fund 25th Annual Report
- Allbutt's System Vol VIII (Macmillan & Co)
- Food and Feeding Chalmers Watson (Cleaveland & Boyd)
- Treatment of Catarract Lt Col H Smith (Thacker Spink & Co)
- Infection and Disinfection By J T Ainslie Walker, F C S
- Schoebe's Die Krankheiten der Wamen Linder (Gustav Fisher)
- International Clinics, Vol III, 1910
- Blair Bell's Principles of Gynaecology (Longmans, Green & Co)

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

- Lt Col D G Crawford I M S, London, Lt Col H Smith, I M S, Jilundur, Major T W Cornwall I M S, Goonoor Di Surwary, Calcutta Lt Col P Hehir, I M S, Lansdowne Capt A T Barker, I M S, Port Blair Capt W Gillott I M S, Buxar Mly Asst Surg Bonche, Aden Capt Hesferry I M S, Capt Hugh Acton, I M S
- Lieut A Campbell I M S, Capt L P Stephen, I M S, Bombay, Major Foulkes, I M S, Waltair Capt F H Stewart, I M S, Calcutta, Capt E W D Groig, I M S, Calcutta, Major Majoribanks, I M S, Nasik

Original Articles.

SANDFLY FEVER IN CHITRAL

BY F. WALL,
MAJOR, I.M.S.

ON the 5th October 1909 the Chitral Relieving Force arrived in Dioso, and garrisoned this Fort and Chitral until the 7th October 1910.

The Relief Force included the 1-3rd Gurkha Rifles, a section of Sappers and Miners, and a section of No 22 Deorajat Mountain Battery.

During the occupation of Chitral many cases of fever occurred among the troops which were returned as follows —

* Pyrexia of uncertain origin	489
Malaria	52
Enteric fever	1
Total	542

Enteric Fever — The single case that occurred was contracted on the line of march and declared itself 3 days prior to our arrival in Chitral.

Malaria — Of the 52 cases, no less than 20 were probably importations occurring as they did in October 1909, just after our first arrival from India.

With the exception of one case in January the remaining cases occurred between May and September, and these were all of the benign tertian type, and very mild cases.

Of the 52, 28 were diagnosed clinically and 24 by microscopic examination conducted in the Divisional Laboratory at Peshawar. There were four other cases which one would have diagnosed benign tertian malaria from the charts, but were not returned as such, a negative report as to parasites having been received from the laboratory.

Pyrexia of uncertain origin — Of the total cases returned under this heading (489), I have eliminated the records of 62, 46 of these on account of their being faulty, or missing, and 16 others that are obviously not sandfly fever cases. Of the 16, 4 are believed to have been benign tertian malaria, others had a trivial and transient fever at no time reaching 100°, and not lasting 24 hours, others again had intermittent fevers lasting from 6 to 31 days, more suggestive of suppuration, or tubercle than sandfly fever.

Of the 427 remaining cases it is very evident that a large majority conform to a distinct type of fever very prevalent in Chitral during the hot months of the year (May to September).

Of this total, however, I feel sure many must be attributed to causes other than that productive of the peculiar type of fever just referred to, the transmitter of which is believed to be the sandfly. My reasons for this opinion are (1) That trans-

sient cases of fever occur in many countries where the sandfly is not known, and such cases are due to constipation, and chills among other causes, which one must expect to be equally operative in Chitral. (2) Among the cases diagnosed microscopically as malaria there were many in which the fever lasted about 24 hours, and that nobody would have suspected as malaria. (3) On September 26th in camp there were thunder showers that rapidly reduced the temperature from 80° F in the shade to below 70° F. That evening 6 men came to hospital with fever, the temperature in every case being normal next morning and it did not rise again. It seems obvious that these cases were due to chill. Similar observations were made on other days, that seemed to point to chills being the cause of several admissions in a few hours. (4) A certain number of one-day fevers occurred in the cold months when as far as we know sandflies are not in evidence. (5) A few cases of one-day fever were admitted into hospital at Madiglasht, the sanatorium where at an altitude of 10,000 ft no sandflies were observed. These cases occurred weeks after the men had left the infected barracks at Dioso, and the exciting cause appeared to be chills. From the above it is certain that a considerable number of cases returned as "pyrexia of uncertain origin," especially one-day fevers, probably also some two-day fevers, were due to causes other than the sandfly, and until some satisfactory method of diagnosing sandfly fever is devised (a blood test or bacteriological examination) it seems to me open to question whether the special type of fever now called sandfly fever ever runs a one-day course. In the absence of a certain method of diagnosis I have included all the cases of "pyrexia of uncertain origin" in one category for the purposes of this report and apply to them the term sandfly fever.

SANDFLY FEVER

Definition — An acute specific fever endemic in Chitral during the hot season (May to September) at moderate elevations (up to 5,000 feet at least), characterised by fever of from one (?) to four days' duration, muscular pains, and great nervous depressions. The general characters of the disease make it appear identical with that described as "pappateci fever" by Doeir, a fever prevalent on the Austro-Hungarian Litorial and that described by Lieut-Col Burt, R.A.M.C., as "phlebotomus fever" from Malta and Cieote. (*R.A.M.C. Journal*, March 1910), and this conclusion is strengthened by the fact that the transmitting agent of the above fevers has been found in Chitral.

Etiology — I submitted specimens of sandflies caught in the Fort at Dioso, to Dr Nelson Annandale (Director of the Indian Museum, Calcutta), who identified two species, viz., *Phlebotomus papatasii* and *P. babu*. These species are very abundant in the Fort, and the fever to which this report refers was prevalent during the months when these insects abounded. They took refuge during the

* Since changed to "sandfly fever".

day in rooms, selecting dark places such as occur behind shutters, doors and windows. They were specially active at dusk, and in the night.

Racial Susceptibility—Of 14 British Officers who were in Diosh during some part of the hot season, 10 suffered from fever which was probably in every case "sandfly fever".

Of 568 Gurkhas stationed at Diosh no less than 456 suffered fever, which was in most cases, I believe, "sandfly fever". The percentage of infections to total strength was as follows—

Europeans	71.43
Gurkhas	80.28
Sikhs	6.25
Punjabi Mohamedans	4.94
Others	16.90

The high percentage of cases among the Europeans and Gurkhas is probably due to the fact that most had come from Hill Stations in India where sandflies are not so abundant as in the Plains. The sandflies met with in the Himalayas where the Gurkha Regiment had been stationed (Almora), are *P. humalayanus* and *P. major*, neither as far as I am aware yet incriminated in the dissemination of sandfly fever. Neither *P. pappatasi* nor *P. babu* have yet been recorded from this locality (Annandale, Records of the Indian Museum, Vol IV, No 11, March 1910).

The low percentage of infections in the Sikhs and Punjabi Mohamedans is probably due to these races having come from the Plains of the Punjab where *P. pappatasi* and *P. babu* are known to occur (Annandale loc cit), and where a fever very closely resembling the Chittai fever is rife during the hot months of the year (Lieut-Colonel Wimberley, I.M.S., *Indian Medical Gazette*, August 1910).

Period of Incubation—This appears to be at least five days from the following incidents. No 2 Double Co, 1-3rd Gurkha Rifles, arrived in Diosh from the Sanatorium Madaglasht (crica 10,000 ft) on the 28th July, and went into the barracks just vacated by men who had suffered from sandfly fever. On the 1st August (5 days later), 4 cases of sandfly fever occurred, on the 2nd, 15 more, and on the 3rd, 19 more. Again No 4 Double Co arrived in Diosh from Madaglasht on the 4th of September, and the first case occurred on the 9th inst.

Symptoms—The symptoms are (1) fever with its concomitant associations (headache, full and rapid pulse, furred tongue, scanty high coloured urine, thirst, anorexia, and constipation), (2) prostration, (3) muscular and joint pains, (4) suffusion of the eyes.

One thing that impressed me was the great variability in the severity of the symptoms, even in cases which there appeared to be no doubt about being sandfly fever cases. This must be explained either by assuming a great variation in the degree of virulence of the toxic agent, or to individual susceptibility. In the wards one would see one man with extreme nervous prostration, lying with closed lids, who resented the

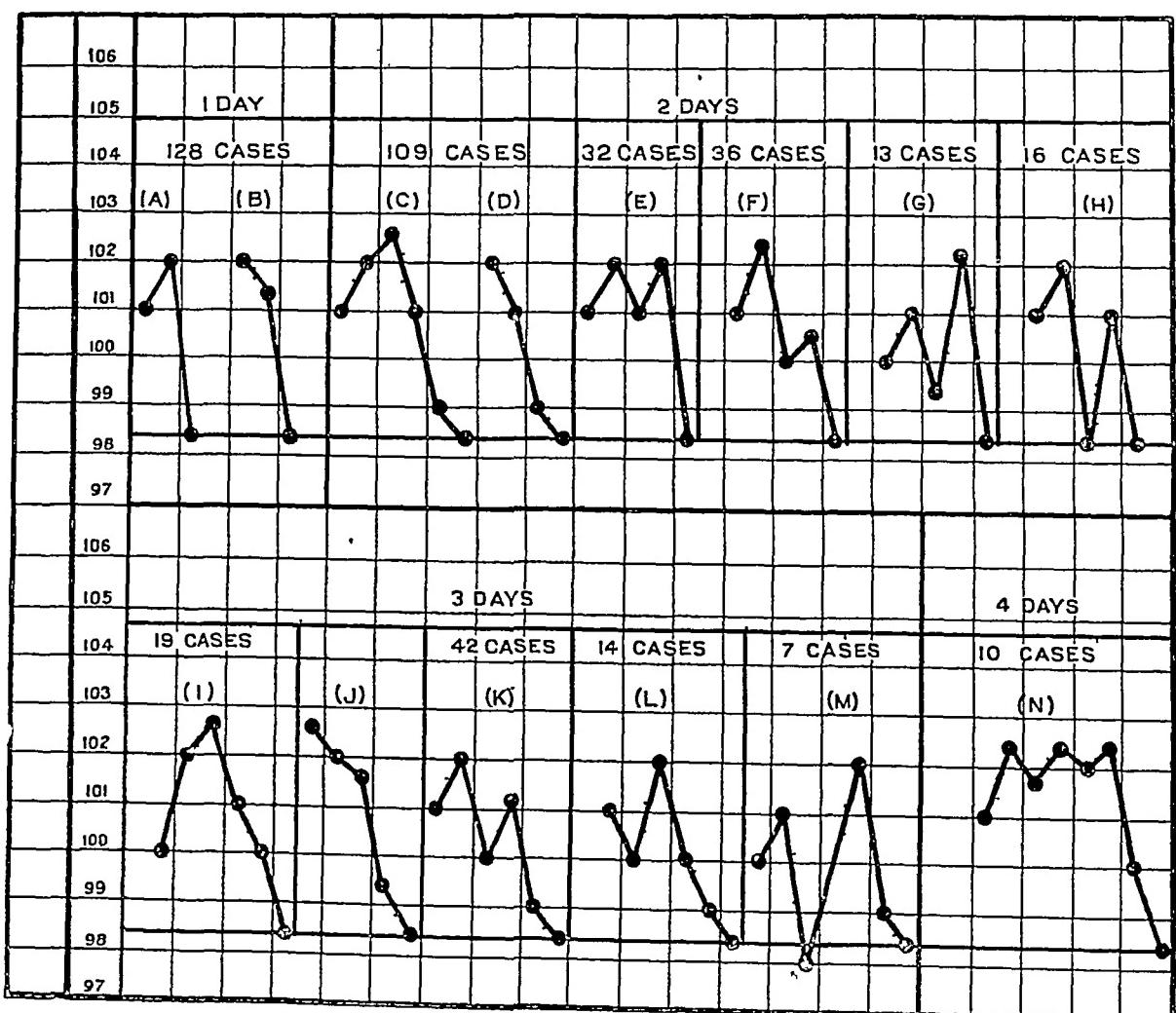
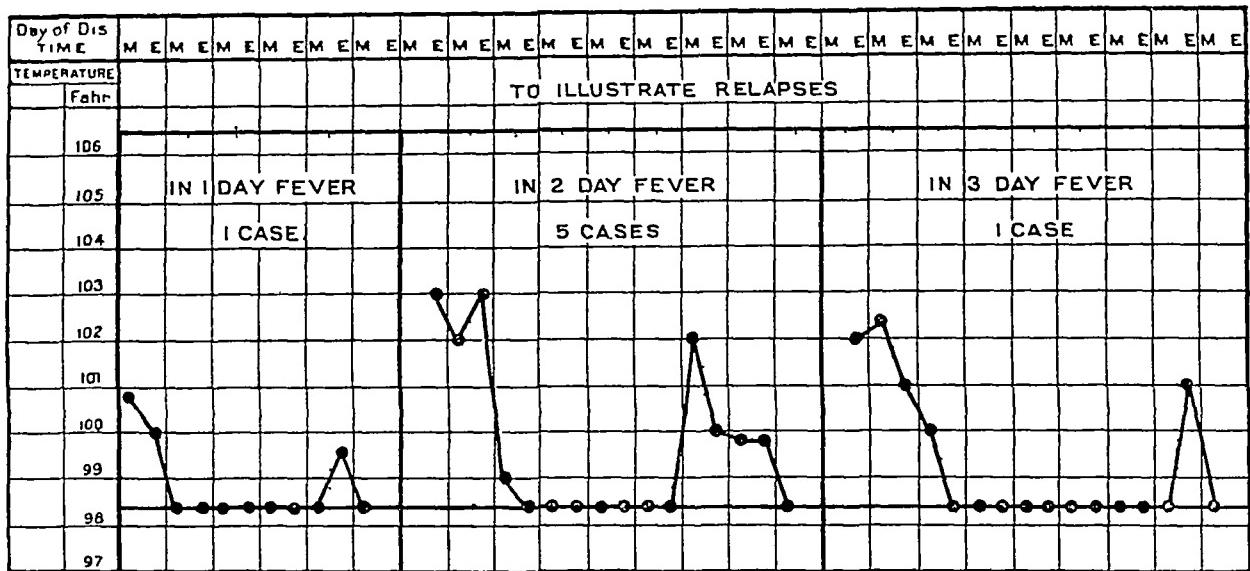
slightest interference, even to answering questions at the doctor's visit, and who when roused had deeply injected eyes, complained of the great severity of his headache, and his muscular pains. He had one wish and that to be left alone to sleep or at any rate try to. Food had no attraction for him. Such a case reminded one forcibly of influenza, in the very next bed might be seen a man with the same degree and type of fever, whose symptoms were slight, who sat up when addressed, did not look specially ill, and had little to complain of.

Fever—In the majority of cases the pyrexia was not ushered in by any rigor, the patient feeling unwell came to hospital and was then found to have fever. The maximum temperature of the attack was usually attained in the first 12 to 24 hours and almost invariably ranged between 101° and 102° F. In many cases the decline was almost as sudden (if these were cases of sandfly fever at all). In many others a secondary crest was formed during defervescence, and this appeared to be the only type of fever which one might call characteristic of the disease, the so-called "saddle back" type. In most cases where this secondary rise was seen, the secondary wave was less elevated than the primary, but in some others the secondary wave exceeded the primary. Usually the primary decline did not reach normal limits, but there were many exceptions. These various types of fever are tabulated in an annexed chart. Types (a) and (b) are really the same, the patient in (a) having arrived in hospital before the crest of the pyrexial wave was reached. Again types (c) and (d) are virtually the same as (a) and (b), but took a slightly more protracted course, and the same may be said of types (e) and (f). It is difficult to say whether any of these one-day fevers were cases of true sandfly fever, specially as the pyrexia produced by chills is frequently accompanied by muscular pains. The remaining types seem to me characteristic of sandfly fever, but only 170 of the total 427 cases were saddle-back types. In only 7 cases are there records of relapses, these occurring on the 5th and 6th days after the initial defervescence. It is probable that this number underestimates the true percentage, as many men had returned to duty before such a relapse would have been manifested, and if this was slight they would not have returned to hospital in all probability, as all men discharged from hospital were placed on light duty for some days. In many cases, on the other hand, it was anticipated and looked for without success almost invariably. In those cases the temperature was taken every 4 hours on the 5th, 6th and 7th days after the beginning of the attack, so that a relapse could not have been missed.

Rash—I cannot remember seeing a rash in my case, though it was looked for. In some of the severest cases, however, at the height of the fever when the oculai injection, and headache were pronounced, a certain puffiness of the

SANDFLY FEVER IN CHITRAL

BY MAJOR F WALL, I M S



features was noticed suggesting muiythee Urticaria and epistaxis when they occurred were seen just after defervescence

Headache—In many cases this was very severe, but in many others was not specially complained of. It seemed to be general in most cases, but was rarely definitely located as frontal or occipital.

Pulse—As a rule this was full and rapid, ranging between 100 to 120 with a temperature of 101° to 102° F. In some cases it ranged from 80 to 100 with the same degree of fever.

days Depression of spirits during, and after the attack was more or less marked.

Muscular Pain—This was a very constant symptom, and pain was specially referred to the lumbar region, the ocular muscles, and often to the muscles of the legs. Pains in the knee-joints frequently occurred too, and sometimes in other large joints.

Suffusion of the Eyes—In nearly every case there was a greater or lesser degree of ocular injection, and I think this was as one would expect commensurate with the degree of

Table to show racial susceptibility and seasonal prevalence

MONTHS 1909 1910	GURKHAS			SIKHS			PUNJABIS			MADRASIS			OTHERS			
	Percentage of sick *	Pyrexia	Malaria	Percentage of sick *	Pyrexia	Malaria	Percentage of sick *	Pyrexia	Malaria	Percentage of sick *	Pyrexia +	Malaria	Percentage of sick *	Pyrexia	Malaria	
October	2 63	15	14	3 12	2			43	1	2				94	1	4
November	1 36	8						12	3							
December	1 04	6														
January	0 37	2	1													
February	0 00															
March	0 33	2						43	1							
April	66	4														
May	1 22	7	1													
June	23 48	136	20	1 59	1									94	1	
July	15 53	90	5	1 56	1			2 47	6					94	1	
August	28 47	172	2			1								5 66	6	
September	2 85	14	2			.								4 71	5	
		456	45					11	2					3 77	4	
					4									18		

* This column refers to sick from pyrexia exclusive of malaria.

† The Madrasis (20 Sappers and Miners) were out in camp from 2nd May till the end of September, the months when pyrexia was prevalent.

Chart showing meteorological records for Drosos

	1909			1910								
	October	November	December	January	February	March	April	May	June	July	August	September
Average maximum temperature	77 29	60 84	52 06	42 80	46 14	54 12	63 50	83 87	91 00	92 00	95 93	85 13
Average minimum temperature	54 09	50 13	39 24	29 42	30 75	39 71	46 00	60 13	80 00	71 00	72 00	61 20
Rainfall, in inches	1 23	0 00	0 78 snow 10"	0 72 snow 32½"	2 02	1 87 snow 1"	4 43	1 09	0 83	1 44	1 68	0 92

Anorexia—This was usually a very prominent symptom, and one generally complained of not only during the period of the fever, but subsequently for many days. Associated with this was also marked loss of taste.

Constipation—The bowels were usually confined, but in some cases there was some intestinal catarrh.

Prostration—In many cases this was very marked, and out of all proportion to the severity and the duration of the fever, the patient complaining of great bodily weakness for many

headache, the brain being probably in the same state of congestion as the eyes.

Blood—In some cases the virus appears to have reduced to coagulability of the blood inordinately, thus urticaria and epistaxis were not very unusual complications after defervescence.

Treatment (a) Medicinal—The cases were treated with a purge and a simple diaphoretic mixture. Where headache was severe, phenacetin and caffeine citrate were given or bromide of potassium. The latter specially seemed to

alleviate the distressful headache. After desiccation tonics were given for a fortnight.

(b) *Prophylactic*.—In view of the probable cause of the fever two courses suggested themselves. (1) To get rid of the sandflies in the infected barracks. (2) To vacate the barracks. (1) It was thought that fumes of SO_2 would kill the flies, but an examination of the barrack rooms showed that any attempt at fumigation was likely to be futile, as a gallery runs round each room, the planking of which left wide spaces through which the fumes (and the sandflies) could escape. Recourse was therefore turned to (2), viz., vacating the barracks. In view of the fact that when No 2 Double Co., returned from Madoghat to Diush no less than 78 cases of fever were in hospital on the 9th day. After their arrival out of a total of 185, I recommended that when the remaining Companies returned early in September, they should go into camp outside the Fort. The result was most satisfactory as the following figures illustrate. No 4 Double Co arrived in Diush on the 4th September and No 1 D C on the 8th September. The admissions for fever subsequently were 16 for the former and nil for the latter Company for the whole month. This could not be attributed to a scarcity of sandflies, for they were everywhere abundant up to the end of the month. Nor could the small admission rate be ascribed to immunity from previous infection before going to Madoghat, for only 125 men of 209 in No 1 Double Co., and only 32 out of 175 in No 1 Double Co., had been previously infected. It seems evident therefore that when the men were removed from the vicinity of the infected cases, though sandflies were abundant, and bit freely, very few cases of fever were contracted. Several cases admitted to hospital for other diseases contracted sandfly fever in the wards. Unfortunately the heat during July and August is such in Diush, that it would not be advisable to put men (Guikhas) under canvas at that season of the year.

Immunity derived from an attack.—Out of the 489 cases, 63 men suffered from two definite attacks of fever, but no man from three. From the 53 available records of these cases I find that only 4 men had a typical saddle-back type of fever on both occasions. In a few cases a saddleback type of fever was manifested on the first, or second occasion, and type (a) or (b) was seen on the other occasion. In most cases types (a) and (b) were seen in both attacks.

A SPECULATION ON DIABETES MELLITUS PRELIMINARY NOTE

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WERE this paper to commence with a description of the treatment employed in the cases shown on the charts which follow, it is extremely probable that no one

would read any further, consequently it is necessary to detail the line of reasoning which led to the adoption of this treatment.

To avoid misunderstanding it may be admitted at once that the reasoning is entirely speculative and, but for the startling results obtained from the treatment denoted, there would have been no object in making it public.

A brief review of the physiological beliefs relative to diabetes is necessary, as it is on those beliefs that the hypothesis is based. It is taught by the majority of physiologists that all working cells require dextrose for the output of energy, which dextrose is taken from the blood. A cell cannot immediately burn off the dextrose received but incorporates it first as glycogen, in which state it is fixed in the cells and may be stored for a long period. During work this incorporated glycogen is used for energy. Von Noorden says, "For the natural fuel of the cells is not glucose but glycogen" (1).

The glycogen used is then replaced from the dextrose in the blood. The amount of dextrose in the blood has a maximum of 2 per cent. Should the percentage rise higher than this, the excess is excreted by the kidneys and a clinical glycosuria results. Activity of cells then means a lowering of the sugar percentage in the blood.

As the sugar is so imperative to the needs of the cells, some mechanism for maintaining the minimum sugar percentage in the blood is essential. This is one of the functions of the liver, which acts as an accumulator of sugar between the intestine and the tissues, and prevents the periodical flooding by sugar during digestion. Dextrose, absorbed by the intestine, passes to the liver where it is temporarily fixed as glycogen, to be turned out again when the sugar content of the blood is lowered, when extra demands are made by the working cells. Thus the sugar balance in the blood is kept at the constant level, on the one hand it is withdrawn according to the wants of the cells, on the other hand it is renewed from the glycogen store in the liver. The output from the liver is regulated possibly by means of a stimulus through the nervous system, possibly by a stimulus due to paucity of sugar in the hepatic artery blood, or possibly by hormones sent by the cells when sugar is needed, such hormone perhaps being a remnant of the broken down sugar molecule, a "metabolic clinker" such as Dr Woods Hutchinson describes uric acid to be.

The action of the liver in converting dextrose to glycogen and vice versa may be due to a ferment with reversible action. The pancreas may be partly concerned in this (as is discussed later). Finally, the dextrose conveyed to the liver is the result of digestion of carbohydrate food, this being turned into maltose by the saliva and pancreatic juice, such maltose being eventually inverted to dextrose by the *saccharomyces entericus* and the protoplasm of the cells of the intestine.

Turning now to diabetes, and using the term to mean only metabolic diabetes (*i.e.*, excluding gross nervous system lesions and pancreatic cases), it is not proposed to enter into a destructive criticism of existing theories of the pathology of the disease, but one point must be touched upon. It is stated by some, that the essential of diabetes is that the tissues have lost the power of utilising sugar. The evidence seems to point to the contrary being the case. The respiratory quotient in diabetics according to some authorities works out exactly similar to that of healthy people, oxidation has been shown to go on as well in diabetics as in healthy people (2). A diabetic, until a late stage, shows no signs of starvation, no emaciation and no loss of weight. In fact, the disease is, as often as not, discovered quite by accident and for a very considerable time produces no further obvious effects on the patient.

Let it now be assumed that the seat of the disease is in the intestine, principally of course in the duodenum, and that the essence of the disease consists in a block

in the absorption of dextrose, partial or complete, according to the degree reached.

This may be due to some inherent weakness in the intestinal cells possibly, in certain cases, from over-work.

Assuming for simplicity's sake, a severe form of the disease when the block may be complete, it may be imagined that sugar from the intestines fails to reach the liver at all. But the liver all the time receives insistent demands from the cells for sugar. These demands the liver cannot comply with, having no stored glycogen to convert to sugar. Stimulated to a great pitch of activity, however, by the more and more imperative demands of the cells, it might, in default of sugar, turn out its ferment into the blood. The circulating ferment would seize on any likely material met with and convert it into dextrose. The cells take of the sugar in the blood and convert it into glycogen as in the normal state, they may have time to burn it off if working, but they cannot keep it stored for any length of time as the circulating ferment would very soon reconvert it into sugar. The cells thus can use the sugar on a sort of cash system, but they cannot store it. This would probably not be manifest but for the percentage in the blood rising too high and the consequent action of the kidneys in eliminating it. In this way a vicious circle obtains, the cells constantly crying for sugar and receiving only a ferment which, while giving them sugar, also snatches away any that they try to store, the kidneys always excreting the excess circulating, thus reducing the percentage in the blood, and so causing fresh calls to be made on the liver which then turns out more ferment. The sugar for the use of the cells is always loose in the blood instead of being fixed in the cells. So one reaches, though in a different way Von Noorden's conception of diabetes, i.e., that "the connecting link, namely, the fixation of glycogen, is wanting."

This extreme stage may never actually occur, but all degrees of it may be imagined. In an early stage only a small number of intestinal cells may fail to absorb sugar, the number increasing as the cause of the disease increases.

The dextrose resulting from salivary and pancreatic digestion then is assumed to remain in whole or part in the intestine. What becomes of it subsequently must depend on conditions prevailing in the intestine. It would not long remain as dextrose, but would undergo very soon either alcoholic, lactic acid, or butyric acid fermentation according to circumstances. The products of such fermentation would be absorbed, and the absorption of such oxidizable matter may account for the beneficial effects of adding carbohydrates to an over strict diet when acidosis has set in.

It is well known that in the early stages of diabetes glycosuria only occurs after meals and more so after excessive carbohydrate meals. It is also an old observation that in slight cases when the glycosuria, by careful dieting, has been brought to a clinical zero, a very slight indiscretion in diet, such as an apple or a glass of beer, brings on the glycosuria again. Not only this, but the sugar may reappear in great excess and may continue to be excreted for a long time after.

Dr Fagge has said, 'Now the only hypothesis which seems capable of explaining such facts as these, is that the saccharine or mucilaceous article of food exerts some directly injurious influence so as to cause the blood to contain an excess of sugar for long afterwards and, if we believe that the liver is the organ principally concerned in supplying the blood with sugar, we can hardly help inferring that it is the liver on which this injurious influence is exerted. It seems as if saccharine food were a poison to a patient that is affected in this way.'

It will be observed that the hypothesis under consideration does not so far account for this action of carbohydrates. It is necessary to account for it and a further assumption is required. Whether the original

cause of the disease is excess of dextrose in the intestine or not, cannot be asserted, but it is here conjectured that carbohydrate in the intestines normally causes the intestinal cells to send a hormone to the liver (and perhaps also to the pancreas) to prepare the way for the reception of the sugar to be presently absorbed. This may be considered an extravagant assumption, but it should be remembered that the liver and pancreas are really duodenal cells, differentiated at an early stage of development, but retaining an intimate physiological connection with the duodenum throughout life. The formation and action of secretion show how intimate this connection is. The hormone in question is assumed to pass to the liver and evoke the production of ferment. The argument at this stage is, no doubt, question begging. The circle is, however, broken by two facts which appear later. No evidence in favour of the assumption of this hormone can be brought forward, but Hertter quotes an experiment made by Tuckett of Cambridge (in another connection) which is suggestive. It was found that when thoracic lymph from a *fasting* dog was injected into the portal vein of a cat, neither hyperglycaemia nor glycosuria resulted, but both of these occurred when the injected lymph was from a *digesting* dog.

The foregoing is the hypothesis on which the experiments which follow have been based, and, as previously stated, nowhere rises above guess work. Without facts it would probably be summed up by most critics in one very short word!

It, however, indicates certain points for investigation. In the first place, it is clear that if a ferment is turned out of the liver into the circulation as assumed, it should be possible to demonstrate its presence in the blood.

This is not only possible, but the presence of the ferment has been found constantly in every diabetic examined.

The demonstration is simple, and consists in testing the diastatic action of diabetic blood on starch solution. In order to avoid the fallacy due to the presence of sugar in the blood, a very minute quantity only is taken from a finger prick.

A five per cent starch solution is taken and the test is always carried out with controls as follows —

1 A test tube containing two drachms of starch solution alone.

2 Two drachms of starch solution with drop of diabetic blood.

3 Two drachms starch solution with drop of normal blood.

4 Two drachms normal saline solution with drop of diabetic blood.

After 24 hours' incubation at about body temperature these four solutions are tested for sugar with Fehling's test and it is found that No 2 is the only one which has a reducing power. The amount of reduction is, as one would expect, very slight, that is, the red precipitate does not come down on boiling, but after boiling when tube has been standing a minute or two. Somewhat the more exact tests have since been made taking half a minum each (measured by pipette) of diabetic blood and normal saliva and incubating them separately with starch solution. It is found that the diastatic action of diabetic blood and normal saliva is about equal in ordinary cases. In two very severe cases the blood ferment was far stronger than saliva.

Diabetic saliva has a very much stronger diastatic action in all cases examined so far.

It is only fair to add, that when testing one case the blood of his son was taken as control. The blood of both father and son was found markedly amyloytic. The son has no glycosuria and seems quite healthy. His blood and urine have been tested several times and at different times of the day, always with the same result. He will be kept under observation.

Amylolytic ferment in blood has been described (5) but the quantity must be very small because, as above stated, only one case of non diabetic blood among very many has been found to have such action in the minute quantities used. Curiously enough Achard and Clerc state that this ferment is diminished in diabetics.

The finding of this ferment was sufficient to encourage a further experiment on the lines indicated by the hypothesis.

It is arguable that if the hyperglycaemia in diabetes is due to the action of the liver as described the symptoms of the disease should be allayed if the liver could be given its ordinary material, dextrose, to work upon.

So if sugar were injected into the portal vein, it might be expected that the ferment produced by the liver would remain there to react with the sugar instead of being turned loose on the body tissues. We cannot of course recommend injections into the portal vein as a matter of practice, but dextrose, fortunately, is so easily absorbed that it seemed likely if it were injected into the intestine low enough down to be beyond the seat of the disease, its absorption might be followed by beneficial results.

After some vicissitudes it was found that a solution containing $\frac{1}{2}$ oz dextrose in about six ounces of water when injected into the rectum and retained, would constantly diminish the glycosuria the same day, the withholding of the injection is followed immediately by a rise in the sugar excretion.

It has been found necessary to attend to two points:

1 Dextrose must be injected. This may seem unnecessary to emphasize, but much delay and annoyance has resulted from having received a consignment of dextrine on one occasion, and cane sugar on another, in response to orders for dextrose. These were received from two reputable European firms of Chemists in India.

2 The injection must be retained for at least two hours and preferably retained altogether.

3 The testing should always be done by the same man. There is a distinctly noticeable personal factor in Fehling's test.

EXPLANATORY NOTE FOR CHARTS

The dotted lines and the inside row of figures show the grains of sugar passed daily.

The outside row of figures and black lines similarly show amount of urine in ounces.

Underneath the charts the black arrows and lines show the amounts of glucose injected on the dates indicated above.

A circle denotes that no injection was given that day.

A cross below means that the injection was not retained on the corresponding day.

Perusal of the charts shows very definitely the immediate fall in sugar excretion after injection, and the immediate rise on stopping the injection. The fall is greatest in the first two days becoming less subsequently. This seems to be due to the fact that the first diminishes with the fall in the sugar excretion, and therefore absorption from the rectum is more rapid and complete at first. (Patients are now being urged to limit their fluid intake as much as possible to encourage thirst.)

Up to date twenty seven cases have been charted, but, only four are appended out of consideration for the Editor. They are more or less typical of all.

After many experiments the treatment now adopted is, to start with two injections of dextrose, each of one ounce on the first day, and one injection of half an ounce on the subsequent days. As a rule this causes no inconvenience, but some patients cannot tolerate stronger doses than a quarter of an ounce for any length of time. The absorptive powers of patients also vary greatly as is shown in the cases given. One exceptionally severe case was under treatment last August and

September. His urine on admission ranged from 500 to 800 ounces and his sugar from 1,4000 to 18,000 grains per day. His age was thirty, and he gave a history of symptoms from only one year back. He was very weak and emaciated. Under treatment his urine came down to between 170 to 250 degrees fluctuation, and his sugar between 3,000 and 5,000 grains, unfortunately one morning he got a shivering fit and a temperature of 101° and he died the next day, probably from terminal pneumonia common in this kind of case, but no physical signs were detected and no post-mortem was allowed. His diet was as follows:

Milk	$\frac{1}{2}$ pint	Vegetables	2 oz
Rice	2 lbs	Tamarind	$\frac{1}{2}$ oz
Bread	1 lb	Condiments	
Mutton	$\frac{1}{4}$ lbs	Salt	
Dhall	2 oz	Oil	{ $\frac{1}{2}$ oz

Daily testing is necessary, as the rectum seems occasionally to fail to absorb, and it is then necessary to stop the injections for a day or two for rest and usually a wash out with a saline is given. It is not yet known how long injections will be necessary to bring any case to zero, it being impossible to get patients of this class to keep on regularly with the treatment. One mild case shown actually came to zero, but he has not come back, so that it is impossible to say if this condition was permanent.

In nearly every case treated the result has been the same and there has been a marked improvement in the general health. Some cases do not, however, react, when there is severe illness of any kind, for instance, one case of chronic malaria showed no improvement at all. Intestinal troubles naturally prevent improvement. One other case gave no results, but as he was a police man applying for medical certificate he may be regarded with suspicion. Late stages of the disease with carbuncles require immediate surgery, as no improvement takes place until the carbuncle has been dealt with. It is in these cases that one finds diacetic acid in the urine which also calls for early treatment. The excretion of sugar usually falls when carbuncles appear, so such cases are not good tests.

It is especially to be noted that no cure is being attempted here, the treatment at this stage being solely employed in order to test the hypothesis. No drugs have been administered and the patients have all been on their usual diets, which, as is well known, are almost entirely carbo hydrate. No case has been noted as giving a positive reaction for diacetic acid. This is the usual experience here, probably on account of the large amount of carbo hydrates consumed. Some of the cases as may be seen from the notes are well advanced.

The severity of diabetes depends on the long continued poisoning of the tissues by dextrose (or by the ferment). This poisoning can at any rate be reduced if not entirely eliminated and though this is an early stage to say so, it does not seem too much to prophesy that no one need in future die of diabetes.

The ferment in the blood should decrease as the patient improves. This, however, requires somewhat delicate testing which is not possible with the means available here.

Whether the hypothesis is proved or not by these cases remains for discussion. The writer, biased by preconceived ideas, is probably the last man likely to reach a correct conclusion. It seems very difficult to account for the reduction of glycosuria and the general improvement of the patient by dextrose injection on any other grounds than those assumed. There are several weak points, not the least being the presence of ferment in the blood of the son of the case noted above.

The general idea of diabetes then, as reached by this theory, is as follows —

1 There are two causes to consider.

First, the cause of the disease, which is assumed to lie in the upper part of the intestine, mainly, no doubt, in the duodenum, preventing the absorption of sugar.

B G Rao Age 55

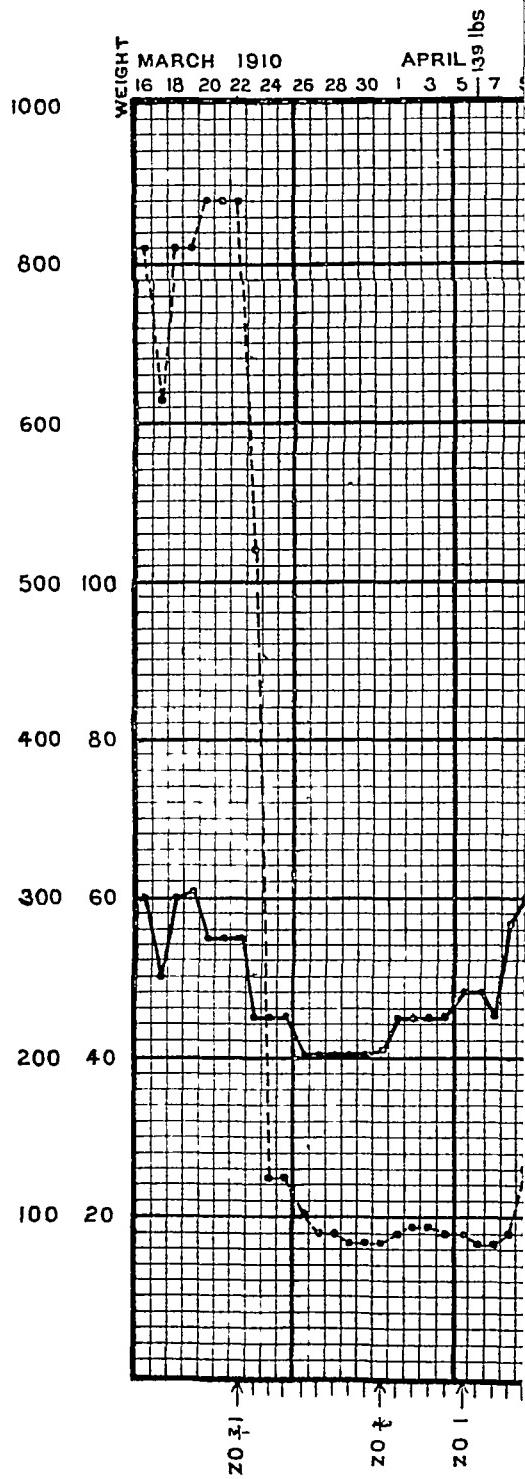
Urine, oz Sugar, grains

April	27		122	2,200
"	28		110	2,000
"	29		99	2,500
"	30		104	3,000
May	1	<u>$\frac{1}{2}$ ounce</u>	110	1,900
"	2	"	100	550
"	3	"	90	100
"	4	"	90	100
"	5	"	90	90
"	6	"	99	90
"	7	"	90	85
"	8	"	92	85
"	9	"	70	60
"	10	"	70	60
"	11	"	70	60
"	12	"	70	55
"	13	"	65	50
"	14	"	65	50
		Discontinued		
May	20		60	1,800
"	21		68	2,000
"	22		65	1,750
"	23	<u>1 oz bd</u>	65	1,500
"	24	"	62	720
"	25	"	33	260
"	26	"	33	260
"	27	"	34	170
"	28	"	32	150
"	29	"	28	120
"	30	<u>$\frac{1}{2}$ oz bd</u>	30	100
"	31	"	32	90
June	1	"	32	100
"	2	"	34	150
"	3	"	35	100
"	4	(Not retained)	35	265
"	5	"	35	280
"	6	"	37	200
"	7	"	35	220
"	8	"	35	200
"	9	"	34	180
"	10	"	35	180
"	11	"	35	150
"	12	"		
"	13	"		
		Discontinued		
October	12		95	1,800
"	13		96	1,700
"	14		100	2,000
"	15		100	1,700
"	16		106	1,600
"	17		110	2,500
"	18		110	2,300
"	19		110	2,300
"	20	<u>1 oz bd</u>	115	2,500
"	21	<u>$\frac{1}{2}$ oz once</u>	90	900
"	22	"	80	480
"	23	"	66	340
"	24	"	68	340
"	25	"	62	320
"	26	"	62	280
"	27	"	62	280
"	28	"	62	280
"	29	"	62	300
"	30	"	60	300
"	31	"	66	300

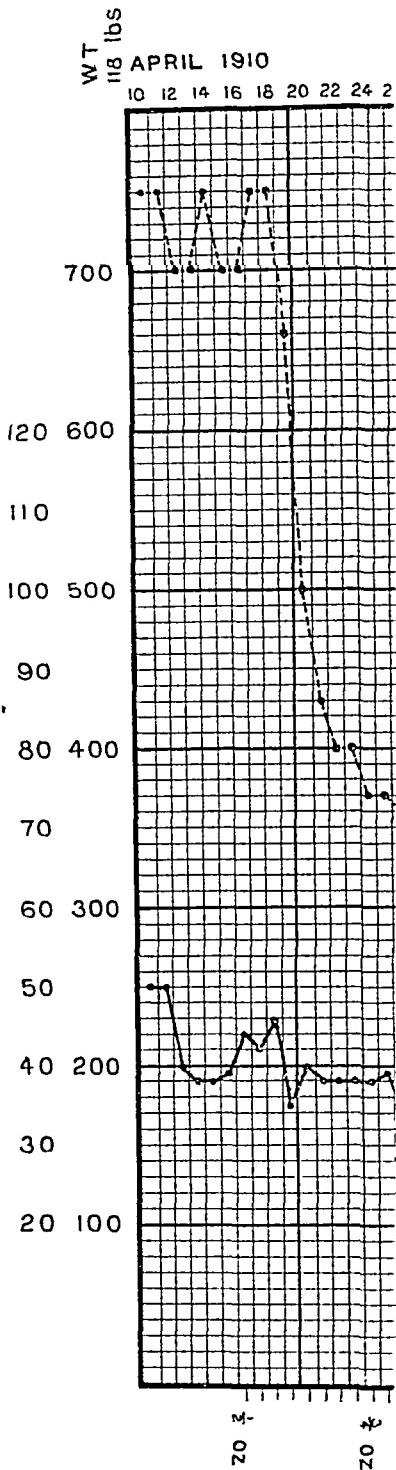
A SPECULATION

A SPECULATION

C APPALA NAIDU, AGE 55



K S NAIDU, AG



This cause the present treatment does not touch, and of it we know nothing. Whether it is bacterial, hereditary, inherent weakness in the cells, or poisoning by dextrose, can only be guessed at present. It is treated by dieting and, in suitable cases, may be cured in this way, but such a cure is not available for high caste Hindus who form the bulk of our patients in this country (Madras Hindus of high caste may not eat meat or even eggs).

Second, the cause of the symptoms, which is the result of the above, and is the one directly attacked by the treatment described.

2 The sugar in the urine is entirely endogenous

3 The sugar formed from food is not utilized but acts as poison on the intestinal cells. It may be absorbed as alcohol, which would be a grim irony of fate in high caste men who are professedly among the most teetotal men on earth.

4 It seems likely that a diabetic who developed a fistulous opening between the urinary tract and the intestine would become partially self regulating, like a shunt wound dynamo.

There are many side issues connected with the subject of diabetes on which speculation might be carried to great lengths. As far as possible in this paper such speculation has been kept within the bounds necessary to make a reasonable working hypothesis.

It will be observed that little mention has been made of the pancreas. It is assumed that the pancreas is not concerned in diabetes. It is true that if the pancreas is removed in animals or, if in man the pancreas is grossly diseased as to amount to removal, a mimicry of diabetes occurs. Taking this fact together with the results shown of glucose injection in diabetes, it may well be assumed that the normal action of the internal secretion of the pancreas is to react with dextrose in the liver acting there as a restrainer of the ferment action, and allowing the liver to fix the dextrose as glycogen. The effect of removal or gross disease of the pancreas would be to interfere with glycogen storage in the liver, so that the circulation would be flooded with sugar after every meal with consequent glycosuria and starvation. It may be remembered that all the venous blood of the pancreas passes straight to the liver.

The changes described by pathologists in some cases of diabetes might sufficiently be accounted for by the chronic poisoning this organ, in common with all other organs in the body, has undergone in cases dying of diabetes. Many organs show far more change and especially characteristic and constant are the changes in the stomach and duodenum.

The cases brought forward are few. The results however, in every case are so constant and similar that it is believed they are sufficient to exclude coincidence. The difficulties of getting together a large number of cases and treating them generally in one place are great.

The experiments mentioned in this paper do not pretend to absolute accuracy. They are done in a corner of the out-patient department. It must be added that this investigation has been done in the spare moments of the usual very busy day's work, and, contrary to the recent statement of Mr MacVengh in the House of Commons, the duties of a Civil Surgeon in this country are exceedingly heavy, and they are not done under the most advantageous circumstances.

It is thought that the results shown are of sufficient importance to be made public so that further investigations may be carried on by more competent hands.

I must express my very great obligations to Hospital assistant Appalaarasayya Naidu (retired) and Sub assistant surgeon Sighamony Pillay who have both rendered me invaluable assistance.

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GLEANINGS FROM THE CALCUTTA POST-MORTEM RECORDS

IV CIRRHOSIS OF THE LIVER.*

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The Frequency of Cirrhosis of the Liver in India—Cases of cirrhosis of the liver are very frequently seen in the wards of Calcutta hospitals. Yet common as they now are, some 30 years ago they were nearly twice as frequent in the post-mortem records as during more recent years. In view of this fact it is surprising to find Norman Chevers in his Commentary on Indian Diseases (1886), remarking "I believe, this condition is rare in Calcutta than it is in London." In the limited literature at hand I have not been able to find any figures illustrating the frequency of the disease in English post-mortems, but McFarland in his *Pathology* quotes Foister as having met with cirrhosis of the liver 31 times in 3,200 post-mortems, in Berlin or just under one per cent. On the other hand, in 4,809 medical post-mortem records in Calcutta, cirrhosis of the liver was met with in no less than 6.9 per cent of the subjects, or 7 times as frequently as in Europe, if the extensive Berlin statistics can be taken as a fair sample.

This remarkable frequency of cirrhosis of the liver in India—it has been reported to be very common in Lahore by D W Sutherland and in Bombay by Gordon Tucker—makes a study of the disease of great interest and importance from several points of view. Firstly, with regard to the rôle of alcohol in the etiology of the disease, medical opinion is in a somewhat fluid state at the present time. Thus, while Hawkins in the last edition of Clifford Allbutt's *System* states that "It is beyond question that the excessive use of alcohol is by far the most common cause of cirrhosis, and that if alcohol did not exist portal cirrhosis would be a rare disease." On the other hand Rolleston in his work on *Diseases of the Liver* and Kelly in Osler's *System of Medicine*, both consider that the rôle of alcohol has been overestimated in the past and that it acts as a

* A paper read at Medical Section, Asiatic Society of Bengal.

predisposing cause by producing gastro-intestinal catarrh, rather than as a direct produce of the liver fibrosis. Moreover both Bianthwaite and Mott have recently shown that cirrhosis of the liver is not common among those classes who are suffering from the effects of chronic alcoholism on the nervous system etc.

The excessive prevalence of cirrhosis of the liver in India certainly cannot be explained on the theory that alcohol is by far the most common cause of the disease, for Sutherland has found the disease to be quite common in very strict Mahomedans in the Punjab, who have never taken alcohol on account of their religious laws. In Calcutta liver cirrhosis is only a little less common in Mahomedans than in Hindus in proportion to their numbers as shown in table III the excess in Hindus not being greater than in the case of amoebic liver abscess, in which alcohol clearly only plays a predisposing and not an exciting part. Further, in the clinical histories of in the earlier records of the present series it is very frequently stated that the patients had never taken alcohol while in only a small proportion of the native patients was excess recorded. Again, although at the present time indulgence in fermented drinks is only too common among the poorer classes met with in the Medical College Hospital, yet on account of their poverty it usually occurs in the form of an occasional excess, especially after receiving their monthly pay, and rarely as the continued soaking which is considered to be the cause of cirrhosis in colder climates. Enough has been said to indicate the necessity of further inquiry into the causes of the great prevalence of cirrhosis of the liver in India and its relationship to other tropical diseases, which may possibly furnish data for a wider view of the pathology of the disease as a whole than obtains at the present time.

Prevalence of different forms of Cirrhosis of the liver in Calcutta—Table I gives a classification of the cases in the Calcutta records, which

filled against three in each of the later periods. The percentage incidence in each period is entered to allow of comparisons being made with each other both as regards the occurrence of cirrhotic livers and their relationship to certain other diseases, which will be considered later.

1 *Ordinary Multilobular Cirrhosis*—A large majority of the cases belong to the common multilobular cirrhosis, also known as Lannec's hob-nail or atrophic cirrhosis, the last two terms being objectional as only applying to the very advanced stage of the disease. They have been subdivided into two classes. The one called "fatal" include all in which the liver disease was the direct cause of death, nearly always with very marked ascites while in those termed "latent" cirrhosis of the liver was found in subjects dying of other diseases, the causes of which are shown in table V and considered later. The two classes combined form over two-thirds of the total while many of those coming under the heading "Kala-azar" were of the same type although on account of their frequency and importance as a complication of the chronic spleen fever it is well to consider them separately as this relationship has not yet been adequately recognised and studied. A considerable majority of the cases classed as ordinary cirrhosis showed the characteristic hob-nail condition but some of the latent ones in particular not infrequently presented the earlier stage with a finely granular surface, which is in no way characteristic of "malaria cirrhosis" as recently stated by Gordon Tucker of Bombay.

2 *Hypertrophic Cirrhosis*—As this term has given rise to much confusion the sense in which it is here used must be defined. It is clear from the Calcutta records that the term has been simply applied to cases of ordinary cirrhosis with marked enlargement of the liver, as is not uncommon in cases terminating after a short course before the organ has had time to contract and will thus include the large fatty form mentioned by Osler. As clinical notes are appended to all the earlier

TABLE I

Classification and Frequency of Cirrhosis of Liver in Calcutta

PERIOD	Post-mortem	ORDINARY FORM				"Hypertrophic"	Ordinary & Hypertrophic %	Kala-azar	Percentage	Syphilitic	Infantile	Total all forms except infantile	Percentage infantile
		Total	Latent	Total	Percentage								
1873-1886	1,940	63	66	129	6.65	7	Percent 7.0	32	1.65	7	1	175	9.02
1886-1893	1,422	37	26	63	4.43	—	4.4	15	1.05	—	5	78	5.48
1898-1909	1,447	31	17	50	3.45	3	3.65	20	1.38	7	1	80	5.51
TOTAL	4,809	133	109	212	5.03	10	5.24	67	1.39	14	6	333	6.9

have been divided into 3 nearly equal periods of time, although the first one includes a larger number of cases as during it 4 volumes were

and to the recent post-mortem records I have been able to look up the histories of the majority of these cases, and found that none of them can

the typical course with chronic jaundice and little or no ascites described by Hanot. On the contrary marked ascites and little or no jaundice was the predominant feature of the series. Nor have I met with a case presenting the microscopical characters of true hypertrophic biliary cirrhosis during the last ten years' experience in Calcutta so it certainly appears to be as rare a disease in Lower Bengal as in England. The cases shown as "hypertrophic cirrhosis" in Table I are therefore only the enlarged early stage of the ordinary form of the disease so have been classed with the latter in working out most of the tables in this paper. In any case their numbers are too small to affect the results except as regards the weight of the liver and spleen, the average of which in the principal forms of cirrhosis are given in Table II below.

TABLE II

Average weights of Liver and Spleen in Fatal Cirrhosis of Liver

Form of Disease	Cases	Liver	Spleen
1 Ordinary multilobular	126	lbs 1 oz $1\frac{1}{2}$	lbs 0 oz $1\frac{1}{2}$
2 "Hypertrophic"	10	4 5	1 7
1 and 2 combined	136	2 2	0 14
3 Kala-azar	39	2 $1\frac{1}{2}$	2 4 $\frac{1}{2}$
Total cases	175	2 4 $\frac{1}{2}$	1 3

The above figures have been worked out for the cases in which cirrhosis of the liver was the immediate cause of death, and does not include the latent cases. In comparing them with those of cases in colder climates it must be borne in mind that the body weights as well of those of the organs is much lower in Bengal than in Europe. The normal weight of the liver here is a little under 3 lbs against about 5 lbs in Europe. On the other hand the spleen will average higher than in Calcutta on account of the frequency with which pathological enlargements are met with. Indeed these are so common that it is scarcely possible to assign a normal weight to this organ, but it is probably between 8 and 10 oz. The liver is therefore less heavy than normal in the ordinary form of cirrhosis while the spleen is a little heavier. In the 'hypertrophic' form both are markedly increased in weight, but especially the liver. If the kala-azar cases are also included the liver is still below the normal weight, but the spleen is two to three times as heavy as normal showing clearly the importance of differentiating this form from the common European type.

Kala-azar Cirrhosis—As early as 1897 I drew attention to the fact that chronic cases of kala-azar not very rarely terminated with ascites due to cirrhosis of the liver and in 1908 I described the microscopical changes in the liver in such a

case, pointing out that the process was essential intalobular, while the surface of the organ might remain perfectly smooth. Table I shows the great frequency of the association of cirrhosis of the liver with kala-azar although in the majority of them the process was further advanced than in the instance above referred to, the organ being finely or even coarsely granular, while in a fair number it was described "hob-nail" and thus indistinguishable to the naked eye from the common form of cirrhosis of the liver. I have recently examined sections of several of these more advanced types of cirrhosis complicating kala-azar, and they showed the characters of multilobular or ordinary cirrhosis together with in some of them, an excess of intalobular fibrous tissue as in the typical kala-azar cirrhosis. We must recognise then that in addition to the special type of the disease, apparently directly due to the kala-azar parasites lodged in the endothelial cells within the liver lobule which were still present in the typical case the ordinary multilobular form may also commonly occur with or without the addition of the intalobular fibrosis. The probable explanation of these facts will appear in the last section of this paper.

The above observations on the microscopical appearances apply to recent cases in several of which the protozoal parasite of kala-azar was demonstrated. The earlier cases were for the most part diagnosed as "malarial cachexia" so it will be necessary to give my reasons for entering them in my table under kala-azar cirrhosis, as others might possibly consider them to be examples of true malarial cirrhosis, with regard to the occurrence of which there is so much difference of opinion. Briefly I may say that in nearly one-third of the total cases classed as kala-azar I have personally been able to vouch for the cases having been kala-azar and not malaria, while owing to the clinical records of all the earlier cases being available I have been able to satisfy myself that these cases also were undoubtedly kala-azar in the great majority of instances. It is also significant, as shown in Table I, that they were most frequent in the first and third periods, differing widely in this respect from the ordinary type. The frequency lately is doubtless due to a larger number of such kala-azar patients having been admitted and retained in hospital until then death on account of the great interest in the disease caused by the discovery of its parasite during the last decade. Further during the first period the Burdwan fever was raging in Lower Bengal, which I showed in my Miltov lectures was nothing but an earlier epidemic of kala-azar. In this connection it is a fact of great interest that several of the early cases classed by me as kala-azar cirrhosis were actually recorded to have suffered from Burdwan fever. On the other hand I am not aware of

there having been any remarkable variations in the prevalence and admission of true malarial fevers during these periods, which could account for the different incidence of the cases classed as kala-azar cirrhosis if they were in Calcutta malarial in nature, or for the entire disappearance of malarial cirrhosis during the last few years since kala-azar was recognised Personally I have no doubt whatever that they are correctly entered as kala-azar cases

Malarial Cirrhosis — It will have been noticed that no cases have been entered in Table I as malarial cirrhosis The reason is that I have not been able to satisfy myself that any such cases occur in the records, or indeed that it occurs as a clinical entity with a fatal termination, and that too after ten years nearly continued pathological study under the extremely favourable conditions obtaining in Calcutta I have frequently cut sections of livers from cases of fatal malaria showing the typical malarial pigmentation, and easily distinguished even by the naked eye from those of kala-azar, and on two occasions have found a distinct but slight increase of fibrous tissue around each lobule containing much melanotic pigment, and impossible to confuse with any other form of cirrhosis of the liver for a moment The liver was somewhat firmer than normal, but there was no evidence of any portal obstruction having been produced, and the condition could only be detected microscopically In no case had any fascites or other symptoms of cirrhosis been induced Even this slight pathological condition is rare Thus no fatal case of malarial cirrhosis of the liver has been met with in the last ten years in Calcutta, all those occurring in association with repeated attacks of fever and greatly enlarged spleen having been kala-azar and not malaria, while the records of the antecedent twenty-seven years point in the same direction I therefore doubt the occurrence in Calcutta of a true malarial cirrhosis of a degree which produces clinical signs of portal obstruction or a fatal termination *per se*

On examining the literature of "malarial cirrhosis" of the liver it is worthy of note that the principal writers on the subject have not excluded kala-azar cirrhosis, which had not been described at the time most of them wrote It is also of great significance that most of the accounts of malarial cirrhosis come from countries where infection with the Leishman-Donovan parasite is now known to occur, including Kelsch and Kiener's well-known account of cases from Algeria In 1908 Gordon Tucker in Bombay and Duprez in Trinidad described and figured cases as malarial which are identical in their clinical appearance with kala-azar, while some of the Trinidad patients were Indians, much of the population of the Island being immigrants from Bengal, and so exceedingly likely to suffer from kala-azar Of

not less importance is the fact that the two last named observers state that they never found malarial parasites in their cases, not even by spleen puncture in Gordon Tucker's cases while the two French observers also failed to find malarial parasites in most of their subjects Moreover, I can find nothing in the accounts of the microscopical and naked eye changes described by any of these writers as typical of "malarial cirrhosis" that I have not met with in the more advanced types of cirrhosis in kala-azar which I have examined The two recent writers fail to mention having sought for Leishman-Donovan bodies in their cases, while they may be absent in the very advanced stages of the disease It is thus an open question whether these authors have not fallen into the common error of mistaking kala-azar for "malarial cachexia," and their observations afford no proof of the existence of a fatal true malarial cirrhosis of the liver due solely to the parasite, toxins or pigment of malaria On the other hand, for reasons to be given later, it is by no means improbable that the ordinary multilobular type of cirrhosis may occasionally be a fatal complication in a patient who has become debilitated by repeated attacks of malaria, in which case melanin pigment will be found in the cirrhoued organs and may easily lead the observer to think he is dealing with a true malarial fibrosis of the liver, although the serious contraction of the liver may be due to quite a different exciting agent, as shown in the last section of this paper

Lastly, it may be pointed out that in the Western States of America, where kala-azar is unknown but malaria common enough, malarial cirrhosis is stated by Professor Osler to have never been seen during fifteen years at the John Hopkins Hospital, while it is extremely rare in America As it is inconceivable that malaria should only produce cirrhosis in countries in which kala-azar also occurs, it may be concluded that malarial infection alone has still to be proved capable of inducing advanced cirrhosis of the liver with resulting clinical signs

Syphilitic Cirrhosis — It is somewhat surprising to find only 14 cases classed as syphilitic cirrhosis out of 333 cases during 37 years, for infection with this disease is appallingly common in Calcutta among the poorer native classes Gummata are also not infrequently found *post-mortem*, being more common than a typically cirrhotic condition This fact is in accordance with the comparative rarity of the late cerebro-spinal manifestations of syphilis, such as tabes, in India The most likely explanation is that the disease is so inefficiently treated by native quacks that it often produces fatal effects before the late degenerative conditions occur, while the great majority of our *post-mortem* subjects in Calcutta are below the age of 40 years

Infantile Cirrhosis—Five of the six cases in this class belong to the well-known series originally described by J. B. Gibbons, M.S., as a form of biliary cirrhosis occurring in Hindu children from a few months to about three years of age, and nearly invariably ending fatally. It is characterised by a monolobular fibrosis extending into the lobules between the liver cells, accompanied by marked proliferation of the bile ducts and sometimes with active regeneration of liver cells. Chronic jaundice with but slight ascites and great enlargement of the liver and also of spleen occur and cause it to resemble Hanot's cirrhosis. Several cases may occur in one family. As kala-azar produces similar visceral enlargement and is not unknown in infants, it would be worth while to look for both bacteria and protozoal parasites in such cases. I had an opportunity of puncturing the liver in one case, but the blood obtained proved sterile on culture, but unfortunately was not examined microscopically. In both this and another case marked leucocytosis was present, which included kala-azar and pointed rather to an infective process.

RACE, SEX AND AGE INCIDENCE

Race Incidence—In Table III are given the race and sex incidence of the ordinary and of the

have been expected if alcohol is the main cause of cirrhosis, for in that case the exemption of Mahomedans should be very much greater than is the case. The necessity of seeking other causes for the disease is thus confirmed by the race incidence. In this connection it is of considerable interest to note that tropical liver abscess has practically as low an incidence among Mahomedans in Calcutta as ordinary liver cirrhosis, namely, 14.4 per cent against 13.1 per cent, which I attribute to the more frequent absence of alcohol as a predisposing cause of amoebic liver abscess among this race. No one would regard alcohol as more than a predisposing cause of liver abscess, for the drug does not produce suppuration in countries where amoebic dysentery is absent. In the same way alcohol appears to be a predisposing rather than an exciting cause of the abundant cases of cirrhosis of the liver in Calcutta. The incidence among Europeans is below and in other races is in close approximation with their proportions in the total records, while their numbers are too few to allow of safe deductions from the figures relating to them.

Sex Incidence—Of the ordinary form of cirrhosis 81 per cent were in males and 19 per cent in females, against 76.5 and 23.5 per cent res-

TABLE III
Race and Sex Incidence

		ORDINARY		Total	KALA AZAR		Total	Percentage all diseases
		Cases	Percentage		Cases	Percentage		
Hindus	Males	139	83.7	166	77.6	83.3	42	74.0
	Females	27	16.3		7	16.7		
Mahomedans	Males	22	78.6	28	13.1	70.0	10	85.0
	Females	6	21.4		3	30.0		
Europeans	Males	7	58.4	12	5.6			78.4
	Females	5	41.6		3.7			
Others	Males						1.8	3.8
	Females							
Total	Males	81.0					76.5	76.5
	Females	19.0						

kala-azar cirrhosis respectively, while similar data for all kinds of diseases are also shown for comparison. The first noteworthy point is the relatively low incidence of ordinary cirrhosis among Mahomedans as compared with Hindus, namely, 13.1 per cent against 21.8 per cent of Mahomedans in the records. Among the kala-azar cases a similar but less marked incidence is found, namely, 18.8 per cent. This relative immunity of Mahomedans is probably closely related to their much greater abstention from alcohol than is the case with Hindus, whose religion does not forbid the use of this stimulant. Still the difference is not so marked as might

pectively of subjects in the records. There was thus only a slight excess in males in proportion to their numbers, which was far below the English figure of 5 males to 2 females given by Rolleston. Among Hindus there was a considerable excess among males as compared with females in proportion to their relative numbers, both as regards the ordinary and the kala-azar forms. The reverse was the case with Mahomedans, but the number of the latter race was small. A predisposing effect of alcohol would best explain the excess among Hindu males, as they enjoy much more favourable opportunities for indulgence than their carefully guarded females.

Of the 11 cases in Europeans 7 were in males and 5 in females.

TABLE IV
Age Incidence

	ORDINARY CIRRHOSIS		LIVER ABSCESS	KALA AZAR CIRRHOSIS		ALL DISEASES
	Number	Percentage	Percentage	Number	Percentage	Percentage
To 20 years	10	4.7	6.0	13	21.7	15.8
21 to 30 "	55	25.8	35.0	25	41.7	36.0
31 to 40 "	70	32.8	37.0	11	23.3	25.5
41 to 50 "	57	26.8	17.1	8	13.3	15.3
Over 50 "	21	9.0	4.3			7.1
Average age	39.6			29.6		

Age Incidence—Table IV gives the age incidence both for the ordinary and the kala-azar forms of cirrhosis, the former including 91 cases classed as "hypertrophic," which, however, do not materially affect the figures. The age incidence of the total *post-mortem* subjects is given for comparison at the end of the table. Taking first the ordinary form of cirrhosis it will be seen that up to the age of 30 years the disease is comparatively rare, while over 30, and especially between 40 and 50 it is exceptionally frequent. This is in accordance with experience in colder climates, although the average age of 39.6 at the time of death, as of most important diseases in Calcutta, is considerably below that recorded in Europe, which is given by Rolleston as 48 years.

When we turn to the kala-azar series we meet with a very different age incidence, for there is a marked excess of fatal cases up to the age of 30, namely, 63.4 per cent of the whole and a corresponding deficit after that period.

It is also of interest to note that the age incidence of liver abscess as shown in column 3 corresponds fairly closely with that of the ordinary cirrhosis, although suppuration is less common over the age of forty years.

Relationship between Cirrhosis of the Liver and Disease of other Organs—In view of the great frequency of cirrhosis of the liver in India, and the impossibility of explaining the excessive occurrence on the alcoholic theory, which is still credited with playing a preponderating part in its causation in non-tropical climates, a close study of the pathological conditions of other organs in my cirrhosis cases appeared to promise interesting results. For this purpose I have analysed and tabulated the principal lesions met with *post-mortem* with the following results—

Congestive Conditions due to Circulatory Changes in Cirrhosis—In the first place we have to carefully distinguish between the results of

and the secondary consequences of the great interference with the portal, and later of the systemic circulation produced by fibrosis of the liver, and those due to disease arising independently, and possibly, antecedent to the liver affection, or directly related to the exciting cause of the disease cirrhosis itself. The former changes are necessarily most marked in cases dying directly of the liver affection, and include the following, nearly constant changes, especially if ascites has been a marked feature, as is almost invariably the case in Calcutta. They include congestion and oedema of the bases of the lungs, often combined with partial collapse due either to slight hydrothorax or the upward pressure of the fluid in the abdomen, engorgement and dilatation of the right heart, congestion of the kidneys, usually most marked in the pyramids, enlargement and congestion of the spleen, often accompanied by fibrosis in chronic cases, and marked oedema, with or without congestion, of the gastro-intestinal mucous membrane usually most extensive in the lower part of the large bowel, and sometimes accompanied by petechial haemorrhages, both there and in the stomach part from haematemesis or malaena.

Organic Diseases associated with Cirrhosis of the Liver in Calcutta—The most important diseases commonly associated with cirrhosis of the liver in Calcutta are shown in Table V. The first column gives those met with in the cases dying directly from the cirrhosis, while in the second column are shown the causes of death in which latent cirrhosis of the liver was also found *post-mortem*. The following are worthy of special note—

TABLE V
Percentage of the Principal Complications of Cirrhosis of the Liver

	In Fatal Cases	In Latent Cases
	Per cent	Per cent
Granular kidney	29.2	13.0
Tubercular disease	7.0	13.1
Acute peritonitis	10.2	
Other lung diseases	5.9	13.1
Heart disease		0.3
Sovere hemorrhages	5.9	
Portal thrombosis	3.2	
Liver abscess		2.3
Gastric & duodenal ulcer	0.6	5.3
Dysentery	25.6	30.1

Granular Kidney—The great frequency of cirrhosis of the kidney as well as of the liver in the same subjects is well known in temperate climates. Rolleston gives the proportion as 25 per cent among 440 cases collected from various sources. Table VI shows the figures obtained from an analysis of my cases in Calcutta classed in accordance with the degree and the type of the cirrhosis. They are divided into (1) Typical

contracted granular kidney, (2) early, but definite disease with granular surface and diminution of the extent of the cortex, and (3) those in which only very slight changes were found such as very slight narrowing of the cortex, some of which were recorded as "incipiently contracted." Omitting the last class as open to doubt, we still find definite cirrhosis of the kidney in 28.2 per cent of the fatal cases and in 13 per cent of the latent ones, which is in close agreement with similar experience in colder climates. It will be shown in a later paper of this series that in Calcutta 12 per cent of the *post-mortem* subjects show a greater or less degree of contraction of the kidney, so that this disease is about twice as frequent in the fatal cirrhosis cases than in the general run of bodies.

TABLE VI

Granular Kidney in Fatal Cirrhosis of the Liver

	Total subjects	Typical	Early	Doubtful
Ordinary Cirrhosis	{ Cases 131 Percentage	8 6.1	29 22.1	16 12.2
Kala-azar Cirrhosis	{ Cases 41 Percentage	1 2.4	5 12.2	1 2.4
Hypertrophic Cirrhosis	{ Cases 10 Percentage	2 20.0	14.6	
Total fatal Cirrhosis	{ Cases 181 Percentage	11 6.4	34 19.2	9 5.35
			26.2	

It will be observed that the incidence of granular kidney is only half as great in the kala-azar series as in ordinary cirrhosis. This is partly due to the average age incidence of the former being ten years less than of the latter, for in India, as elsewhere, granular kidney becomes increasingly frequent with advancing years. Secondly, the lower proportion of granular kidney in kala-azar cirrhosis is due to this disease so often proving fatal from various complications which the fibrous changes in the liver are in a comparatively early stage, and therefore less likely to be complicated with similar lesions in the kidneys. Still the total cirrhosis of the liver cases were complicated by organic disease of the kidneys in 26 per cent in spite of the average age of the subjects having been about ten years less than in European series.

Tubercular Disease—Rolleston states that tubercle elsewhere than in the liver is a common complication of cirrhosis of the liver and may be either active or latent. In my Calcutta series tubercle of the lung was only found in 7 per cent of the fatal series generally in an old latent form while it was the cause of death in 13 per cent of

the latent cirrhosis cases. As in the total *post-mortems* 17 per cent showed advanced active tubercle and 8 per cent more old latent pulmonary lesions (see No II of this series of papers, *Indian Medical Gazette* February 1909) tubercular disease is not especially frequent in cirrhosis of the liver in Calcutta.

Other Lung Diseases were mainly pneumonia and in a few cases bronchitis and were naturally more frequent in the latent series. Heart diseases showed a similar incidence.

Copious haemorrhage into the gastro-intestinal tract was met with in 6 per cent of the fatal cases, and thrombosis of the portal vein was noted in 3 per cent more. *Liver Abscess* was the cause of death in 2.3 per cent of the latent cases.

Of greater interest and importance is the remarkable frequency (25 to 30 per cent of the occurrence of ulcerative conditions of the gastro-intestinal tract in this series of cirrhosis of the liver, as these might well lead to an infective process in the organ.

The Relationship of Dysentery to Cirrhosis of the Liver in the Tropics—In view of the exceptional frequency of cirrhosis of the liver in India the very common association of dysenteric lesions with it in Calcutta suggests the possibility of the two diseases being very intimately related to each other. The last thirty-seven years *post-mortem* records of the Medical College Hospital afford invaluable data for a study of this question, and I have spared no pains in an endeavour to extract reliable figures from them and in guarding against possible sources of fallacy, as will appear from the following account of the results obtained.

First looking at the facts from the broadest point of view we may study Table VII, in which are shown the number and percentages of dysentery cases and of cirrhosis of the liver in the three approximately equal periods into which the records have been divided. In column 3 the percentage of cases in which dysentery was entered in the records as a cause of death are given. The figure is about twice as high during the first period as during either of the two later ones. Turning to column 7 we find that the total cases of cirrhosis of the liver (the six cases of infantile biliary cirrhosis only being omitted as probably a distinct disease) are also nearly twice as high during the first as in the two later ones. This coincidence is at least sufficiently striking to make it advisable to inquire into the question more closely so I noted the gastro-intestinal conditions in all the cirrhosis cases including the presence of scars of old dysenteric lesions as well as active disease. The latter have also been divided into recent and chronic ulceration, for it must be carefully borne in mind that recent lesions may occasionally be due to a terminal dysentery, which could have no etiological relationship to the older cirrhosis of the liver. On the

TABLE VII
Prevalence of Cirrhosis of the Liver and of Dysentery

Period	Post mortems	Cases indexed as dysentery	Percentage	Percentage of other cases with dysenteric lesions	Total with dysenteric lesions	Cirrhosis cases	Percentage	Ratio of cirrhosis to dysentery
1873-1886	1,940	475	23.5	9.62	341	175	9.02	1 to 3.8
1886-1898	1,422	144	10.12	8.89	190	78	5.48	1 to 3.3
1898-1909	1,447	183	12.64	7.27	109	80	5.51	1 to 3.6
Total	4,809	781	16.3	8.56	2186	333	6.90	1 to 3.6

TABLE VIII
Relationship between Dysentery and Cirrhosis of the Liver

Gastro intestinal lesions	ORDINARY AND HYPERTROPHIC				KALA AZAR			
	Fatal cases	Latent cases	Total	Percentage	Fatal cases	Latent cases	Total	Percentage
Tubercular only	70	45	115	43.3	25	13	38	57.6
Tubercular only	2	8	10	8.6				
Ulcers in stomach or duodenum	1	6	7	2.9		1	1	1.5
Recent dysentery	15	10	25	10.4		3	6	9.1
Chronic dysentery	17	32	49	20.3	10	5	15	22.6
Dysenteric scars	28	7	35	14.5	5	1	6	9.1
Total	61	55	116		18	10	28	
Percentage	45.7	50.9	48.1		41.8	43.6	42.6	
Chronic dysentery and scars	34.6	41.6	37.8		34.9	30.4	33.3	

other hand, a very chronic dysentery, and still more the scars of healed ulcers in the large bowel, may well have been antecedent in date to the cirrhosis, and thus have proved a source from whence toxins or pathogenic organisms may have reached the liver and there set up disease. In addition to dysenteric ulcers in other parts of the gastro-intestinal tract were also noted, although they are much fewer in number than those of the large gut. The figures thus obtained are shown in Table VIII both for the common form of cirrhosis and separately for the kala-azar cases. Each class has also sub-divided into those dying directly of cirrhosis and latent cases found in subjects succumbing to other diseases. At the bottom of the table will be found the percentages in which all forms of dysenteric lesions were present, together with a very few cases of chronic ulceration of the stomach and duodenum, while the figures excluding recent dysentery, and consequently including only chronic forms of ulcerative disease which may possibly have preceded the liver affection are also separately given. The few cases of tubercular ulceration of the large bowel are separately shown at the top of the table as they were nearly always of recent origin and not likely to have preceded the fibrosis of the liver, and while their addition to the dysenteric lesions would

unnecessarily complicate matters Old healed tubercular ulcers have, however occasionally been met with post mortem in one of which cirrhosis of the liver probably of a more recent date was found. The two conditions may, therefore, possibly be associated although such an event must be very too rare to merit more than mention.

Taking first the ordinary form of cirrhosis, including ten hypertrophic cases ulceration of the bowel other than tubercular was met with in no less than 48 per cent or almost one half. Moreover, in no less than 37.8 per cent the lesions were of a chronic nature. Another interesting point is that the proportion of active dysenteric lesions is higher among the latent cases than in those directly fatal from cirrhosis, which should not be the case if many of them were terminal infections. Still more significant is the fact that in the latent, and consequently earlier, cirrhosis the most frequent form of bowel lesion is chronic ulceration very frequently together with pigmented scars of older healed ulcers. On the other hand, among the cases dying of advanced cirrhosis much the commonest condition was scars of old healed dysentery, generally of an extensive nature. Now this is precisely the relationship which might have been anticipated if the cirrhosis is really secondary

to the bowel lesions, although the point did not occur to me until the figures had been worked out and clearly indicated it.

It is clear that, unless the total series of *post-mortems* also shows an equal or nearly equal incidence of dysenteric lesions to that in cirrhosis cases, there will be very good reason for looking on chronic antecedent dysentery as a most important factor in the production of the great excess of fibrosis of the liver met with in Calcutta and probably also in other parts of India and the tropics.

Turning to the smaller kala-azai series we find a very similar, but slightly less marked relationship. Thus 42 per cent showed ulceration other than tubercular, while in 33.3 per cent it was of a chronic nature. Scars of old lesions were again most frequent in the cases dying of advanced cirrhosis. It must be remembered that terminal dysentery is not a very infrequent end of kala-azai patients, but here again chronic lesions of the bowel were more frequent than recent ones, while this fever may last for a number of years up to ten or more in exceptional cases, and not rarely from three to five in the case of the sporadic type so commonly seen in Calcutta. Moreover, I have not infrequently seen severe attacks of dysentery complicating kala-azai recovered from, and recently a patient in the Calcutta European hospital was also cured of his kala-azai after such an attack. Since I described the peculiar intalobular type of cirrhosis due apparently to the protozoal parasite of kala-azai I have several times met with the ordinary hobnail atrophic type complicating the disease. If this is commonly secondary to antecedent dysentery, its occurrence in chronic kala-azai is readily explained and the otherwise puzzling fact that most of the present kala-azai series of cirrhosis showed coarsely granular condition of atrophic cirrhosis instead of the smooth surface of the intalobular form will no longer present any difficulty.

As true malarial cachexia is often complicated by intercurrent attacks of dysentery some of the cases of cirrhosis of the liver, which have been described as due to malaria, may well have really been secondary to the bowel valuating as in kala-azai. This would also account for them often presenting the common multilobular type microscopically.

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column 4 of table VIII. The figures of the three periods only vary between 7.27 and 9.62, so may safely be taken as fair samples of the whole record. By adding together the figures of columns 3 and 4 those in column 5 are obtained, which represents the total percentage of recent and old dysenteric lesion in each period. These figures are highly instructive, for they are almost exactly proportionate to the number of cases of cirrhosis of the liver in the same periods, the figures in the first period being almost double those of each of the subsequent ones both for dysenteric lesions and for cirrhosis of the liver. The proportion is so close in each period that the ratio of cirrhosis to dysentery cases only varies in the three periods between 3.3 and 3.8, the figure of the whole series being 3.6 as shown in the last column of table VIII. This fact, taken with the further one that dysenteric lesions are twice as frequent in cirrhosis of the liver as in the general run of subjects, appears to me to afford very strong ground for considering that there is a definite relationship between the two diseases. If only chronic dysenteric lesions, which probably preceded in time the liver disease, are considered, the relationship would be still closer, and forces me to the conclusion that chronic dysentery bears a directly causative relationship to the occurrence of cirrhosis of the liver, and further that the great frequency of the hepatic fibrosis in Calcutta is largely dependent on the frequency of chronic dysentery among the Medical College Hospital patients.

Comparative Infrequency of Cirrhosis of the Liver in Europeans in Calcutta.—As nearly all the *post-mortem* subjects at the Medical College Hospital are natives of India, they teach little regarding cirrhosis of the liver among Europeans. I have therefore examined the clinical notes of the large European General Hospital for five years and found only 23 cases returned as cirrhosis. In only 10 of these were the typical symptoms of the advanced disease, including ascites, present in three fairly definite signs of early cirrhosis were recorded while in the remaining 10 the clinical notes did not appear to me to furnish any certain evidence of the disease. As there are commonly as many as from four to six advanced cases in the Medical College Hospital at one time, although there are only a few more beds in it than in the European Hospital it is clear that cirrhosis of the liver is relatively rare among Europeans in Calcutta as compared with natives of the country. This incidence is further emphasized by the fact that the disease is as rare in the European wards of the Medical College Hospital as it is common in the native ones.

The importance of the above data lies in the impossibility of explaining the much lower incidence of cirrhosis among Europeans in Calcutta on the theory that alcohol plays a preponderating part in the causation of disease, for other effects of

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The importance of the above data lies in the impossibility of explaining the much lower incidence of cirrhosis among Europeans in Calcutta on the theory that alcohol plays a preponderating part in the causation of disease, for other effects of

chronic alcoholism are undoubtedly more frequently seen among the poorer Europeans met with in the Calcutta Hospitals than among the native patients. On the other hand, the above facts are readily explained if antecedent chronic dysentery is a common exciting cause of the cirrhosis, for dysenteries are both less common and, on account of more prompt and efficient treatment, they are far less frequently allowed to pass into the chronic intractable stages among Europeans than among natives of India, so large a proportion of whom do not come early under the care of qualified medical men.

The Probable Mode of Action of Dysentery in producing Cirrhosis of the Liver. — It only remains to consider the possible modes in which cirrhosis of the liver may result from chronic dysenteric ulceration of the large bowel. In the first place the kind of dysentery must be taken into account. During the last two years I have had special opportunities of studying dysenteries in Calcutta, including microscopical and bacteriological examination of the stools. Without going into details here I may state that my recent experience has shown that the common form of dysentery in Calcutta is the amoebic variety, and that this is preponderatingly the case with chronic and relapsing cases, such as have been shown above to be so intimately related to cirrhosis of the liver. It is also of interest to note that amoebic abscess of the liver is not infrequently found in cirrhotic livers in Calcutta, while Morehead noted the same thing in Bombay many years ago. A remarkable recent example is given below. Again, as far as I can judge from the notes a large majority of the cases of chronic dysentery associated with cirrhosis of the liver in the Calcutta chronic amoebic dysenteries, while this was certainly the case among those which have come under my own observation during recent years. By a fortunate coincidence during the last three weeks, and subsequently to working out the figures included in the tables of this paper, I have met with the two following striking examples of the association of chronic amoebic dysentery with the ordinary portal cirrhosis of the liver.

Advanced Multilobular Cirrhosis of the Liver associated with Chronic Amoebic Dysentery. — A Mahomedan male, aged 30, died after being in hospital for two months with cirrhosis of the liver, ascites and some jaundice. He gave a history of occasional diarrhoea, but none of dysentery. Post-mortem very advanced hobnail liver was found, which microscopically proved to be of the ordinary multilobular type. The caecum showed a small patch of typical active amoebic ulceration, while scattered throughout the ascending colon alone were separate, rounded and oval markedly pigmented scars of old amoebic dysentery. The absence of dysenteric symptoms during life was

doubtless due to the limitation of the lesions to the upper third of the large bowel, just as I have pointed out is so commonly the case with liver abscess, patients giving a negative history of dysentery. It is clear from this case that such a history does not necessarily exclude even a very chronic amoebic dysentery such as might well have originated before the cirrhosis of the liver and have been casually related to the latter disease.

Chronic Amoebic Dysentery with recent Caseated and Calcareous Liver Abscesses and early Portal Cirrhosis of the Liver. — A still more interesting and instructive case is the following. A Hindu male, aged 45, was admitted for amoebic dysentery of very long standing in a greatly emaciated and anaemic condition and died a few days later. The coloured drawing of his large intestine which I pass round, shows recent active amoebic ulcers in the caecum with the typical raised tawny yellow surfaces. Throughout the rest of the bowel are separate very chronic ulcers and markedly pigmented scars. Some of the ulcers are partly healed and present extensive pigmentation around them. Thus we find every stage of the process from fairly recent active ulcers to the dark scars of old healed ones, the whole being evidently of very long duration in accordance with the history. On examining the liver, the surface was seen to be slightly granular in places. On cutting into the right lobe a small recent abscess with a definite fibrous wall, about one inch in diameter and containing living amoeba, was found, together with a small partly calcareous nodule. The next section showed a small caseous mass surrounded by a thick fibrous wall but the scar tissue did not radiate into the surrounding liver tissue as in a gumma. A second small calcareous mass was also found in this section. The left lobe was free from such lesions. We here have every stage of liver abscess from the recent active one through a dried up caseous one to the calcified condition, showing clear evidence of amoebic infection of the liver of long duration corresponding to the very chronic bowel lesions. The liver substance was so firm throughout that it could not be broken down by strong digital pressure. On section it showed well marked early portal cirrhosis as shown in the section under the microscope. It would be difficult to conceive of a more striking illustration of the relationship of chronic amoebic dysentery and hepatitis to early cirrhosis of the liver, the latter disease being certainly later in time than the bowel trouble and consequently almost certainly the exciting cause of the cirrhosis. Incidentally it may be pointed out that this case demonstrates that several small abscesses of the liver may completely dry up to themselves, while I may mention that the Calcutta post-mortem records show this to be by no means a very rare event, thus materially strengthening the probability that under the ipecacuanha treatment

even an early stage of actual amœbic abscess formation may sometimes be aborted. The great frequency with which a negative aspiration by experienced surgeons has been followed by recovery under ipecacuanha is best explained on such a supposition.

These and other cases within my experience, confirm the view that it is chronic amœbic dysentery which is especially closely related to cirrhosis of the liver. Nor is it difficult to conceive the nature of the relationship of the two diseases. In the first place we know that the most marked feature of acute amœbic infection of the liver, producing suppuration in the organ, is the rapid formation of a dense fibrous capsule around the softened focus in the entire absence of all bacterial infection. There is thus no doubt about the power of the amœeba to excite the formation of fibrous tissue in the liver. Secondly, I have elsewhere shown that very chronic forms of a hepatitis secondary to amœbic dysentery may produce low fever of many weeks or even months duration and eventually either form a liver abscess or yield to ipecacuanha treatment. In such cases showers of amœba are continually reaching the liver, and if not sufficiently numerous in any one place to produce suppuration, they may at any rate produce a chronic inflammation of the organ which may well ultimately lead to result in a general fibrosis of the organ.

Another possibility is that any form of gastro-intestinal ulceration, of which dysenteries as a whole are by far the most frequent in Calcutta, may lead to secondary bacterial infection of the liver, possibly of a coli nature—coli infections of various kinds being especially common in Calcutta, as I hope to show in another paper shortly—and thus lead to a chronic inflammatory process ultimately terminating in a cirrhosis of the liver. Adami has shown that a form of cirrhosis in cattle in the Picton Province of Canada is due to a bacterial infection, so that a similar process in man is by no means improbable.

Lastly, I may mention as a point in favour of an infective agency in the causation of liver cirrhosis, whether due to protozoal amœba on the one hand, or bacterial infection on the other, is the fact that I have recently found leucocytosis to be the rule in the more acute forms of cirrhosis of the liver, with the exception of cases secondary to kala-azar, when there is a leucopenia as in all forms of that disease. Moreover the degree of leucocytosis present appears to be of considerable prognostic value, for in a few cases in which it has been very marked, such as 30,000 and 43,250, death has ensued from cholemic symptoms within a few days. On the other hand a normal number of leucocytes has generally been found in cases running a chronic course, and is thus of more favourable

prognostic value. A very low count indicates kala-azar, the spleen being commonly markedly enlarged in such cases. If the prognostic value of leucocytes count in cirrhosis of the liver is confirmed by further experience it may well prove of practical value in enabling suitable cases to be selected for surgical treatment.

It is clear from what has been said that our ideas regarding the etiology of cirrhosis of the liver require to be greatly broadened in order to cover the facts emerging from this study of the disease as seen in Calcutta, and I venture to hope that the following tentative conclusions will stimulate other workers to further investigations of this very frequent and important disease in tropical climates.

CONCLUSIONS

1 Cirrhosis of the liver is several times as frequent in Calcutta among natives of India as it is in a temperate climate, but is not especially common among European residents there.

2 Although Mahomedans are forbidden the use of alcohol by their religion, the cirrhosis is only slightly less frequent among them than in Hindus in proportion to their relative numbers, not more so in fact than in the case of abscess of the liver, in which alcohol is only a predisposing and not an exciting cause. For this and other reasons the increased frequency of cirrhosis in India cannot be explained on any theory which makes alcohol the most important exciting cause of cirrhosis.

3 One-fifth of the cases in Calcutta are secondary to kala-azar, being partly of the typical intralobular form described by me, but also commonly of the ordinary portal or multilobular type or both combined.

4 There is no evidence that malaria ever produces a clinically evident cirrhosis of the liver in Calcutta.

5 Hanot's hypertrophic or biliary cirrhosis is rare in Calcutta, but a form of infantile biliary cirrhosis described by Gibbons of unknown origin is met with.

6 In Calcutta cirrhosis of the liver is so frequently associated with chronic dysentery, usually of the amœbic type, as to suggest that the fibrosis of the liver is secondary to the bowel ulceration.

7 Chronic inflammatory changes due to bacterial infection or toxic absorption through ulcers of the gastro-intestinal tract is also a likely cause of cirrhosis of the liver.

8 Leucocytosis is common in the ordinary type of cirrhosis of the liver, a high degree being of very bad prognostic significance. On the other hand a leucopenia points to a cirrhosis being secondary to kala-azar.

A Mirror of Hospital Practice.

PANCREATIC CYSTS

By ASSISTANT SURGEON O G HASSAN SUHRAWARDY,
House Surgeon, Medical College Hospital

PANCREATIC Cysts are rare, but during 1908 to 1910, there was a run of four cases in the Medical College Hospital. All the four were successfully operated on by Major R Bnd and came under my care two cases of monolocular, and one of the multilocular variety have already been published in the *Indian Medical Gazette* (September 1910, page 347). The fourth one is that of a Hindu male, aged 45, a zamindar's employee, named Djendia Nath Datta. He was admitted into hospital on the 15th July, 1910, with a tense tumour in the epigastrium, tender to the touch, with persistent hiccup and irregular rise of temperature for about a fortnight. Before this he had suffered from dyspepsia and mental depression to a marked degree. The swelling in the epigastric region was convex and uniform and reached from below the tip of the ensiform cartilage to just above the umbilicus and laterally to near the ends of the tenth rib. The tumour gave the impression of being attached to some deep-seated structure. The patient was extremely exhausted and ran down not having been able to retain food or fluid for about a week. He had been addicted to the abuse of alcohol for the last twenty years. He gave history of melena but not of haematemesis. There was no definite history of trauma. Indian was present in the urine. Blood examination showed white blood corpuscles, 22000. Polymorpho-nuclear 82%, large mono-nuclear 11%, small mono-nuclear 7%, eosinophile—nil.

On the 16th July, laparotomy was performed by Major Bnd and the tumour cut down upon. A dirty green fluid, slightly soapy to the feel, welled out on opening the cyst. On exploring the interior of the tumour with the hand, none of the abdominal viscera could be felt, it being a retro-peritoneal cyst in connection with the pancreas. The fluid from the cyst was examined, and was alkaline in reaction. There was albumin present, mostly of the nature of serum albumin. Blood corpuscles were present, met-haemoglobin was present, there was no reduction of Fehling, Brunet reaction was negative.

Physiological experiments with the fluid were also carried on thus—Four test-tubes were arranged, and in each a definite quantity of egg-albumin was put. In one 1 c.c., in another 2, in the third 5, and in the fourth 10 c.c.s of the cystic fluid was added. In another series of four test-tubes, starch solution was put in and similarly treated. All the test-tubes were placed in an incubator, and the result noted

at the end of 24 hours. The third and fourth test-tubes of the first series showed the presence of albumose in them. The test-tubes of the second series reduced Fehling's solution, thus demonstrating the presence of proteolytic (trypsin) and amylolytic (amylase) substances in the fluid.

No attempt was made to extirpate the cyst, because of its intimate relationship with important structures and the extremely feeble condition of the patient. The margins being stitched on to the abdominal incision, the tumour was simply drained. There was no marked change in the patient's condition. He continued to vomit and to hiccup, and his pulse was steady as before. Rectal alimentation was carried on. Efforts at stopping the hiccup and vomiting, and improving the condition of the patient by medication per mouth, subcutaneously, and per rectum failed. The patient, however, showed slight improvement after 3 or 4 dressings, and gradually rallied till at the end of a week rasin tea, lime-whey, and peptonised milk were gradually allowed and kept down by the patient. By the 15th day of the operation, soft solid food was allowed and the patient made an uninterrupted recovery, the wound granulated up, and he was discharged on the 15th of September. He is now all right and wears an abdominal belt for support.

My thanks are due to Col. Drury, I.M.S., and Major Bnd, I.M.S., for kind permission to report the case.

TREATMENT OF KALA-AZAR BY THE HYPODERMIC INJECTION OF A SOLUTION OF QUININE SULPHATE

By E. MUIR, M.D.,
Kalna

The usual percentage of deaths given in kala-azar is something like ninety. For the last three years, however, I have had very much better results than this since beginning to use a solution of quinine sulphate hypodermically. Indeed in almost all cases which have come for treatment within the first three months of illness, and which have persisted with the treatment for a sufficient period, there has been a cure.

The treatment consists of the injection of the following solution—

Quin sulphato	Grains 32
Acid sulph dilut	Drachm 1
Aqua distil	. Drachms 4

From 20 to 90 minimis of this solution are injected into the latissimus dorsi muscle in adults or into the gluteal region in children.

The injection of such a solution is necessarily very painful and, where, as is generally the case, it has to be given repeatedly, the patient naturally objects to it. The injection may be given absolutely painlessly, however, by a very simple expedient. Five minimis of a 2 per cent solution

of cocaine is first injected, the needle is left inserted, the syringe withdrawn from it, the solution drawn up into it and injected after a couple of minutes into exactly the same place where the quinine solution was injected.

The result of the injection, if given in the right dose, is to produce a certain amount of painless effusion, which lasts for a greater or less time depending on the dose and on the individual. If the blood be examined and a differential leucocyte count taken, a marked increase of the polymorphonuclear leucocytes will be noticed. In one case in which I had failed after searching three slides to find a single polymorph, I found 47 per cent a week after such an injection. At the same time there is a very marked reduction in the size of the spleen and, if it is enlarged, in the size of the liver. As a rule, if the case is not very far advanced, the temperature becomes normal and, what is even more important, the patient begins to put on weight.

Injections have to be repeated as soon as, or rather before, the effusion from the first injection has disappeared, until the spleen and liver have entirely disappeared. If too large a dose be given a certain amount of pain may accompany the effusion, but there will be a still greater leucocytosis, a still more rapid diminution in the size of the liver and spleen, and, although there may first be a few days' rise in temperature before it becomes normal, the appetite, weight and general health of the patient increase more rapidly.

Analogies to this form of treatment are to be found in most countries where kala-azar is prevalent. Of these the most efficient I have seen is that used by the natives of Syria where kala-azar is common in the valley of the Jordan. They tie in a seton consisting of a loop of duty string through a loop of skin over the spleen, thus keeping up a constant state of irritation and suppuration until the string ulcerates its way out. This treatment is followed however by rapid diminution in the size of the spleen and general improvement in the state of the patient.

In Bengal a common mode of treatment is to first scarify the skin over the spleen by rubbing it with the leaf of a tree of the *Ficus* order and then apply a powder made by burning the core of the jack fruit. This has the effect of producing a large ulcer with some beneficent results.

In Kalna, where we have sometimes as many as seven or eight hundred cases of kala-azar in the week, many of whom willingly undergo treatment in hospital, I have had plenty of opportunity of thoroughly testing treatment by quinine sulphur injections, and have seldom found it fail, when the patient came within the first six months, except in those who gave up the treatment when they got temporary relief and before they had had time to be perfectly cured. With regard to the question of whether the cure is permanent in the case mentioned above where

I failed to find any polymorphs in the blood, this patient, who had been ill for over six months, and whose whole abdomen appeared to be filled with liver and spleen, made a complete recovery after three months' treatment in hospital and she has had no relapse of the disease although two years have passed.

Natives who have been cured are of course liable to a reinfection, seeing they generally continue to live in an infected area, but, where there is a reinfection, the subsequent attack tends to be more mild than the previous ones.

Injection of turpentine has also an effect similar to the injection of quinine sulphate solution, but after using them both in many hundred cases, I have come to the conclusion that the former is both much less painful and more effective. As a supplement to the injection treatment cinchona given by the mouth is very effective, much more so than quinine. It is difficult to know the reason for this, but to any one who has tried the two thoroughly there can be no doubt of it. We generally give a mixture containing cinchona, arsenic, iron, and magnesium sulphate.

As to the dosage of quinine sulphate solution that should be given hypodermically this depends on the age of the patient, the extent of the disease, and on the individual. It is best therefore to begin with a small dose, say 20 minims in the adult and be guided as to increasing the dose by the amount of effusion two days later.

It is very doubtful whether any part of the benefit of hypodermic injections in kala-azar is due to the absorption of quinine, whether the sulphate be used or the more easily absorbed salts. Quinine is much more easily absorbed when given by the mouth as is evidenced by the rapidly produced ringing of the ears which an equal amount of quinine given hypodermically fails to produce. It seems likely that even the undoubted benefit derived from quinine injections in malaria is in large part due to the effusion of lymph and the accompanying changes in the blood produced.

The analogy of kala-azar being checked by the production of a serious effusion is also brought out in certain diseases due to septic organisms. While Cavernous Ossis is a common complication in kala-azar, often making it end fatally, I have repeatedly on the other hand seen it result in the cure of the kala-azar. A patient was admitted to hospital with a large spleen extending to beyond the umbilicus and suffering from gangrene of the lung. He was coughing up large quantities of putrid matter by the mouth. The chest was drained by removing a part of a rib. The boy made a rapid recovery, but as long as there was any pus in his chest his spleen continued to diminish in size and the temperature remained normal. When, however, the wound in his chest had healed up there was a return of temperature accompanied by enlargement of the spleen. It was till after three or four quinine

sulphate injections that his temperature became normal and his spleen finally impalpable under the costal margin. I could multiply cases in which a similar process took place, they all serve to illustrate that any process in the body, whether it be septic or not, if it produces effusion of lymph and leucocytosis, it tends to check kala-azar. Leishman-Donovan bodies still can be found in the spleen even after it is much diminished in size, but in diminished numbers, and division forms cease to be found.

A METHOD OF PERFORMING GASTRO-JEJUNOSTOMY AND INTESTINAL ANASTOMOSIS BY A SINGLE ROW OF SUTURES

By J R ROBERTS, M.B., M.S., F.R.C.S., Eng.,
Lt Col, I.M.S.,

Residency Surgeon, Indore, C.I.

IN stomach and intestinal surgery one of the essentials of success is rapidity, and where time can be saved without the sacrifice of efficiency it is most desirable to aim at getting the operation done quickly, there is both a lessening of shock and the effects of prolonged anaesthesia. The operation of gastro-jejunostomy takes some time when there is a double row of sutures to be put in—Cenzy's then Lambert's. I used to bring the peritoneum of the stomach and jejunum together by a row of stitches including only the peritoneum, then open the viscera and put in a row including all the coats, then sew over the peritoneum in front by a Lambert's suture. I now save time, and my wound is just as firm, and safe from leakage as formerly, by inserting only one row of stitches. The operation is performed as follows. First, in order to hold the stomach and intestine together put in two stitches at either end through the peritoneal and muscular coats, these are left long and the ends are then held by an assistant. This serves to keep the viscera together while one is operating. See fig 1. I then divide the peritoneal and muscular coats down to the mucous coat leaving this latter entire with one needle and suture. I then sew the peritoneal and muscular coats together as in fig 2. The next step is to open both mucous membranes as in fig 4, and with another suture sew the muscular and peritoneal coats over the front. The operation is completed by removing the sustaining sutures at either end. In order to test the sewing, catch the stomach and intestine between the hands and try and force air or liquid through. This pressure will be greater than is ever likely to occur when the viscera are replaced, and no pressure within moderate bounds seems capable of making anything come out between the stitches. For the uninitiated I may add that the walls of the stomach and intestine are

much thicker than one would suppose so that there is an ample thickness of peritoneum and muscle to sew together, and make a strong line of stitches. As my stitching is subsequently exposed to the gastric juice I have not used catgut but prefer fine

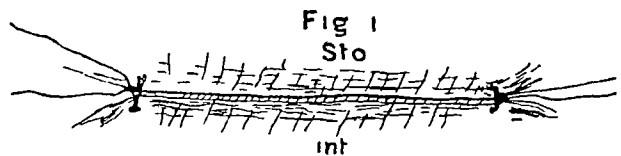


Fig 1

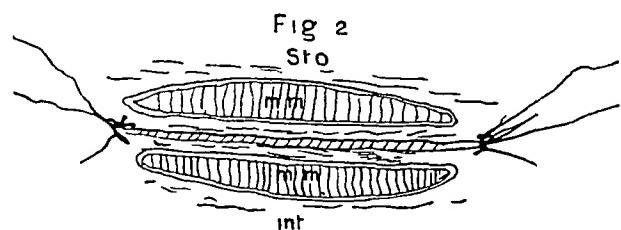


Fig 2

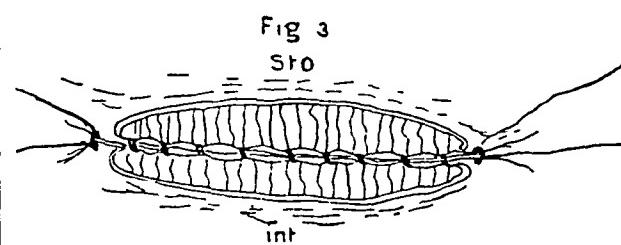


Fig 3

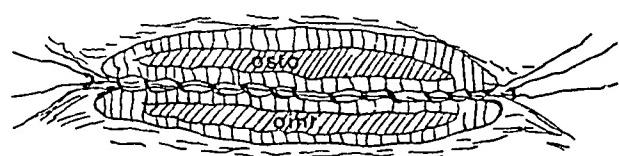


Fig 4

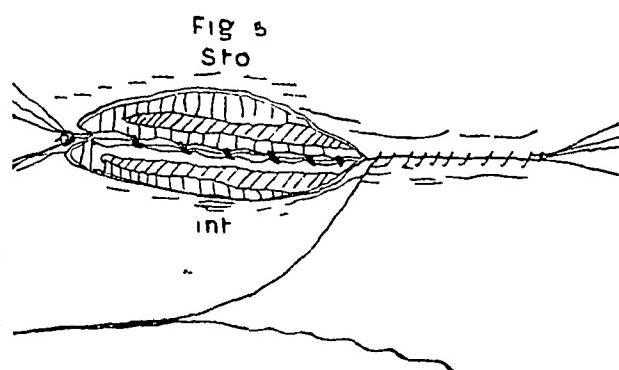


Fig 5

Japanese silk. I have now performed this method in three operations successfully, and in others previously used to stitch double behind, and single in front, until I devised the method of opening the viscera in two stages.

Indian Medical Gazette.

FEBRUARY

"SOME CONSIDERATIONS OF MEDICAL EDUCATION"

UNDER the above title* Dr S. Squigge, of the *Lancet* staff, has republished a series of valuable and interesting papers on Medical Education in England.

The medical education system of the United Kingdom is briefly described, the position of the General Council of Medical Education and Registration is explained, and the valuable nature of the work done by that body is insisted upon.

Much of the book is devoted to the anomalous position of the London students, where owing to the admittedly high standard of the London University degrees the average student has to either be content with the diplomas of the two London colleges or to go elsewhere for a University degree. This question has been the more acute of recent years owing to the multiplication of new Universities which can give their students the degrees which, however absurd it may be, still in the eyes of the public and of future patients rank higher than the College diplomas.

We are not very sanguine of any very satisfactory results of the proposals made in 1908 for a rapprochement between the London University and the Colleges. It was proposed that while that University retained its existing rights as to the granting of degrees, it "should consent to exercise them as regards pass degrees conjointly with the Royal Colleges so far as those students are concerned who shall have spent not less than four years in study at London schools and who have complied with such conditions as the University and Royal Colleges may determine. It is assumed that the University will continue to grant, independently of the Colleges, degrees in medicine and surgery which might be called honour degrees."

That is to say the London student would have three courses open to him, (1) to be content with the diplomas of the Colleges, (2) to aspire to the difficult degrees of the London University or (3) to pass the joint examination of the University and Colleges and thereby become entitled to the degrees of M.B., etc., which the

public apparently look upon as the hall mark of a medical education. This matter has been referred to a Royal Commission. We confess we have not much expectation of a satisfactory solution of this problem, as regards the London student.

It is more probable in our opinion that it will lead to a strong revival of the old proposal of a "one portal system," which, it is not too well known, was only lost some years ago by the single vote of one dissenting body. Under the "one portal system" the State would hold identical examinations in certain capitals or University towns simultaneously and admit the successful candidates to the Medical registers, under, it is said, the title of "M.D." or at least with the clear specification that each man admitted could call himself "Doctor." Each University and College would still grant its degrees and diplomas to its own students, which would probably vary in difficulty and finally in value.

There is much to be said for the one portal system, but the different value and prestige of the degrees or higher diplomas of the Colleges would still remain. The other very important matter, which Dr. Squigge discusses, is the overloaded curriculum and the increase in the length of a student's career. It is admitted that the five years' course is only five years in name. Five and a half years' is the minimum time necessary and six and even seven years is more usual for 80 per cent of students. This is a very important point. The medical student is not usually drawn from the wealthy classes and the prospects held out by a medical career to a majority of students are not such as justify the great expense of a course which lasts for 6 or 7 years and only turns out a man qualified to practice at the age of 25 years—too late for example for a man entering the I.M.S. to get promotion to Colonel or even to get his full pension without an extension of service beyond 55 years of age. The fact is that in these days of specialism and of new departures in medicine the time devoted to practical medicine and surgery, and the laboratory work, necessary for practice nowadays, is too short. As long as the preliminary subjects, chemistry, physics, biology, botany, etc., occupy so much of the medical student's time it is not possible for him to be equally well grounded in the really important and practical portions of his work, unless the period is extended beyond 6 or 7

years, and then the question of expense comes in forcibly. Something must be thrown overboard, or a lesser degree of efficiency demanded in the subjects such as those above mentioned, or in the subjects which most medical men soon forget, *viz.*, advanced physiology and minute anatomy. In our opinion for the majority of students (and this we think applies especially to our Indian Schools and Colleges), there is too much minute anatomy, physiology and chemistry, to the detriment of good clinical work. Something must be thrown overboard, for longer courses will drive away students. Let those subjects be reduced which are soon forgotten, let the elements of them be soundly taught and let individual students take up advanced or honour courses and so time will be gained for the practical work of a profession, where it is of infinitely greater importance to be able to set a leg, reduce a dislocation or diagnose an appendicitis than to be able to accurately describe the brain cells or enumerate the branches of the ophthalmic artery.

Current Topics

THE PLAGUE ADVISORY COMMITTEE'S INTERIM REPORT

THE extraordinary method adopted of publishing the report of the Advisory Committee on plague which was appointed by the Secretary of State, the Royal Society and the Lister Institute has necessarily deprived it of some of its value. Few persons see it and the report comes out in intermittent instalments as extra numbers of the *Journal of Hygiene*. Such an extra has just appeared, dated November 1910. It forms part of volume X of that excellent and high class journal and is continued from p 308 of vol VIII.

The present issue consists of seven papers or contributions, as follows — Plague epidemics in animals, plague in rats, plague in scattered villages, plague in Belgaum, plague in Poona, vaccination of animals against plague, and an interim report by the Advisory Committee.

We quote *in extenso* the following —

"The following statement embodies the chief conclusions which have been provisionally reached by the Advisory Committee as the result of the investigations made under their direction from 1905-1909 into the mode of spread of plague in India.

(1) Considerable epidemics of human plague consist almost entirely of cases of bubonic plague and are directly dependent on the occurrence of epidemic plague in rats. The development of the rat epidemic precedes the human epidemic by an interval of about a fortnight. There is no evidence that any animals except rats play an important part in plague epidemics.

(2) Epidemic plague in rats

(a) Rat fleas which have sucked the blood of a plague infected rat can transmit the disease to healthy rats to which they are transferred. The plague bacilli multiply in the stomach of the flea, and the flea may be still capable of conveying infection three weeks after having imbibed plague infected blood.

(b) If plague infected rats are kept in close confinement along with healthy rats, no epidemic of the disease occurs in the absence of fleas. In the presence of rat-fleas the disease spreads from the infected to the healthy animals, and the rapidity and severity of the epidemic so produced is in proportion to the abundance of fleas.

(c) Rats may be infected by feeding them upon the bodies of other rats dead of plague. The distribution of the lesions in the bodies of naturally infected rats corresponds with that in rats experimentally infected by means of fleas and not with that in rats infected by feeding.

The Committee, therefore, conclude that *in nature* plague is spread among rats by the agency of rat fleas.

(3) Epidemic plague in man

(a) Bubonic plague is not directly infectious from man to man as is shown by the experience of plague hospitals where there is no tendency for the disease to spread from the sick to the attendants.

(b) Material epidemics of plague in man are always associated with epidemic plague in rats. Epidemic plague among rats provides a large number of infected rat fleas, and owing to the mortality among the rats, brings these fleas on to human beings.

(c) Rat fleas (*Pulex cheopis*) bite human beings, especially in the absence of their natural host.

(d) Rat fleas containing plague bacilli and found capable of transmitting plague to animals may be caught in plague infected houses.

(e) Animals susceptible to plague (guinea pigs, monkeys) placed in plague infected houses if unprotected from fleas may contract the disease, whereas such animals under the same circumstances remain free from plague, if protected from fleas.

(f) The Commission have also performed numerous experiments with a view of testing other possible modes of infection, and have found that

i. In the absence of fleas no epidemic resulted when animals susceptible to plague (guinea pigs) were kept in close contact with infected animals although the animals took their food off floors grossly contaminated by the excreta of their infected companions.

ii. Susceptible animals (guinea pigs) caused to live upon and feed off floors artificially saturated with plague cultures failed to contract the disease.

iii. The excreta of plague infected patients may contain plague bacilli, but the bedding, etc., of plague patients soiled with excreta containing plague bacilli was not found to be infective to highly susceptible animals caused to live in and upon the bedding.

The Committee, therefore, consider that *in the great majority of cases during an epidemic of plague man contracts the disease from plague infected rats through the agency of plague infected rat fleas.*

(4) The seasonal occurrence and spread of plague

(a) The Committee has obtained no evidence that under ordinary conditions the plague bacillus survives for more than a few days outside the bodies of men, animals or fleas.

(b) In large towns plague may persist throughout the year since a few cases of acute plague in men and rats occur during the non epidemic plague season.

(c) In villages there is no satisfactory evidence that such persistence is of other than exceptional occurrence, and it seems probable that the recurring annual epidemics in such places are due in most cases to fresh importation of the infection.

(d) There is no evidence that plague infection is carried for more than short distances by the spontaneous movement of rats. Plague appears to be commonly

imported into a fresh locality about the persons of human beings, though the transference of infected rats and fleas in merchandise must be considered

(e) In districts which suffer annual epidemics of plague, the rat epidemic, on which the human epidemic depends, occurs during some part of that season when the prevalence of fleas is greatest"—(*J. of Hygiene, Nov 1910*)

RACE BETTERMENT

WE have received a little book written by Dr J Ewing Mearns, of Philadelphia, U.S.A., entitled *The Problem of Race Betterment*, in which the writer in an interesting manner discusses the important question of improving the human race by selection and by preventing the multiplication of the unfit—that is of the weakly neurotic, criminal, insane and epileptic.

This is a question which concerns all civilised nations as a rule, the poorer classes breed freely, almost recklessly, while the so-called "better" class exercise more moderation. The science of Eugenics is one which must commend itself to medical men, and there is no doubt that the world would be the better for being rid of the progeny of the weakling, the half imbecile or the insane.

The question of heredity is by no means settled, but there is no doubt that the offspring of the degenerate tend to be more so. It is, however, by no means certain that nature does not to some extent safeguard the race, for it is probable that the degenerated are relatively infertile—apart from the fact that they less seldom find persons to marry them.

It will, however, surprise many readers to learn that advanced opinion in America has been supported by law and that Acts have been passed and are in force to permit the asexualisation of degenerates, e.g., the State of Indiana passed an Act on February 10th, 1907, the State of California on 20th April 1909, and the State of Connecticut on 12th August 1909. The California Act is thus worded "An Act to permit asexualisation of the inmates of State Hospitals and the California home for the care and training of feeble-minded children and of convicts in the State prisons." The Indiana Act is "To prevent the procreation of confirmed criminals, idiots, imbeciles and rapists."

By these Acts the right of the State is recognised in the exercise of its duty as guardian of the privileges and rights of its citizens to prevent the perpetuation of criminality and of degeneracy by inhibiting procreation in the criminal and in the defective subject.

The matter is one which must be strongly supported by public opinion. The question has arisen in Europe and is much discussed. It is interesting to learn that in democratic America state socialism has reached such developments.

THE STANDARDISATION OF DISINFECTANTS

THE number of so-called disinfectants placed upon the market is enormous. The public have a firm belief in them, especially those which are in reality deodorants, and hide rather than remove any insanitary condition.

Even medical men inundated as they are with circulars and advertisements lauding the virtue of some particular article are often at a loss what to use or what to recommend.

The time has certainly come for an attempt to standardise disinfectants so that a medical man in using or recommending the use of such may know what it is intended to do. It will be admitted that the following qualifications are necessary in any article to be used for such purposes—

(1) It must be highly efficient, (2) non-poisonous, (3) uniform in strength, (4) permanently homogeneous, (5) it must remain stable in the presence of organic matter, and (6) it should be cheap. How are we to test efficiency? The simplest and best way is to have a standard or way of measuring the direct action of any disinfectant upon living organisms. In what is now well known as the Rideal-Walker test a method of measuring the comparative germicidal values of disinfectants has been established, and we hope that the time is not far distant when legislation will insist upon all disinfectants sold to the public complying with this or some similar and well-established test.

INDIAN MEDICAL DIRECTORY

THIS is a useful publication, which is published by "Practical Medicine, Delhi." It is a list of qualified medical practitioners in India and is divided into two parts. Part I is devoted to medical practitioners, private and others and Part II to medical officers of the Indian Army, which latter purports to be a list of medical officers of the R A M C and I M S. It is alphabetically arranged. The entries for medical officers of the services seem to be bodily taken from Churchill's Medical Directory, and in some cases is very up-to-date. In one instance, we note the expression "Specialist in Tropical Diseases" after the name of a well-known Civil Surgeon in Bengal. It is obvious that such a list to be of any use must be issued annually or even quarterly. There is no use in giving the location "Civil Surgeon, Dustypore," as before the book is in print the officer may have been transferred. And the same applies to adding "on leave" after an officer's name. The inclusion of the names of R A M C officers is of too little use, unless the book is intended to be very frequently issued, and anyone wanting the information here given can obtain it in the annual Directory published by Messrs J & A Churchill or in the current issues of the Army and Civil lists.

THE COMET-LIKE PATH OF A PARA

SOME ten or eleven years ago we wrote a paragraph commenting on a remark made by Mr E H Hankin of Agra, on the supposed presence of an antiseptic in the water of the Ganges. To our certain knowledge this remark has been revived and solemnly repeated by one newspaper after another, at least twice since it originally appeared, and doubtless each time some readers think it new. We do not know whether Mr Hankin still believes in the "mysterious" antiseptic. Most people are content to attribute that "hostility" (such as it is) of Ganges water to cholera not to anything mysterious, but to the vast volume of the water and to the ever present aid of the disinfecting power of the sun's rays. In Madras Colonel W G King, I.M.S., found the same degree of "hostility" in waters, quite unsacred, and sensibly attributed it to the effect of intense sunlight on shallow waters.

We have only referred again to the subject to show how a paragraph may go the rounds of the newspapers and appear and re-appear at intervals, almost like a Halley's Comet.

In the *Journal of Tropical Veterinary Science*, Vol V, No 4 (Nov 1910), Major F S H Baldrey, F.R.C.V.S., C.V. Dept., calls attention to an error of statement made by Capt. Patton, I.M.S., in his review of the work of the King Institute, Madras, on the subject of Bovine Paraplasmosis in India and shows by an amplitude of quotation that this subject has received a very considerable amount of attention from officers of the Veterinary Department in India.

As usual this issue of the Journal, *T. V. S.*, contains a very complete resume of the current literature of parasitology.

WE desire to call attention to the Indian Section of the Festival of Empire and Imperial Exhibition, 1911, the profits of which will go to the King Edward VII Hospital Fund. It is proposed especially to illustrate (1) the History of India, (2) the Life of the Peoples, (3) Indian Art. The loan of manuscripts, models, books and portraits is requested. The Exhibition will be held at the Crystal Palace from May to November 1911.

The Chairman of the Committee is Lord Plymouth and the Chairman of the Indian Committee is Colonel T Holbein Hendley, O.R.E., I.M.S. (ret'd.), a well-known authority on Indian Art and previously an I.M.S. officer, well-known in Rajputana and in Bengal.

THE attention of all interested in the classification of mosquitoes is directed to the *Records of the Indian Museum*, Vol IV, No 5 (Nov 18, 1910), which is a monograph by Major S P James, I.M.S., on a "new arrangement of the

Indian Anophelineæ." He is convinced that it would be very difficult if not impossible to correctly arrange the Indian species by the aid of the tabular statement used by Mr Theobald, and he suggests a new classification. The subject is too technical for these columns and it would not be possible satisfactorily to make an abstract of it, but we commend the monograph to all interested.

THAT much talked of drug "606," to be known as *Salvarsan*, the new specific against *spirochaeta pallida* is now obtainable from Messrs Meister Lucius and Bruning, Ltd., Hornby Road, Bombay.

REQUIEM

The Prevention of Malaria — By Major RONALD ROSS London J Murray (Second Notice)

IN the second half of Major Ross's book some eighteen contributors mention what has been done to combat malaria and mosquitoes in their respective countries. The first article is by the American entomologist, Professor Howard, and is headed "Antimalarial Work in the United States." It seems that the Professor, like several other writers in this book, has not fully realised that antimosquito work is not always antimalarial work. At the end of his article he fears it will appear that in the United States nothing like the competent work has been done that should have been done,—a conclusion to which the reader will be led by noting that a great part of the article is occupied with an account of measures which, having regard to present knowledge, cannot be regarded as in any sense antimalarial. The second and third articles, by Colonel Gorgas and Mr Le Prince, respectively, deal with the campaign on the Isthmus of Panama. The account by Colonel Gorgas is a model of brevity, and the important part played by quinine and by "screeching" in the success of the campaign is clearly brought out. It is now well-known that the campaign was a complete one, in which every hygienic weapon was used regardless of expense, and we note that, by omitting to refer to the great improvements made in regard to the social and economic conditions of the labour force, Colonel Gorgas has not done justice to the minute attention given to every method of preventing sickness and death. His present estimate of the cost of sanitation on the Isthmus is 3½ dollars (about 14 shillings) per head of population per annum, and he has recently been reported as saying that such expenditure is well within the means of any tropical community. We fear that when Colonel Gorgas

made this statement, and when Professor Osler echoed it (in the *Lancet* of October 8th), they were unaware of the poverty of India. We need not consider the subject beyond noting that in Indian rural areas similar to Panama the yearly sum available for every need is only a few pence per head of the population. Details can be ascertained by consulting the annual "Statistical abstract relating to British India." Colonel Goigas writes that of the 3½ dollars per head, two dollars were spent on "mosquito work," and in this connexion it is worthy of note that for this expenditure he was able to carry out mosquito work within only 200 yards of villages and only 100 yards of individual houses. Indian experience teaches that such "immediate vicinity operations" have little, if any, effect on the prevalence of *anopheles*, and we are therefore not surprised to gather from Mr LePrince's account that adult *anopheles* are still very abundant in Panama, on page 360 he states that at Cocoli, in April 1908, thirty or more adult *anopheles* could be counted in each tent. The fourth article is by Sir R. Boyce and deals with malaria in the West Indies. The article contains a list of towns in which a pipe-boiled water-supply has been introduced since 1850, and in some of which certain antimosquito laws have been passed, but the writer omits to mention what is probably the most important recent antimalarial measure adopted in nearly all these colonies, namely, the introduction of a system for selling quinine at cost price, or less, on the lines of the Indian scheme. Our readers will find useful information about malaria in these and other British Colonies in the report of the Advisory Committee for the Tropical Diseases Research Fund, 1909. In the next article, malaria in Jamaica is dealt with by Dr. Prout, who states that in February 1910 the sum* of £5,000 was voted to carry out various measures. Dr. W. Thomas writes next about malaria in the region of the Amazon river. He gives a graphic account of the ravages of the disease, but, except in the city of Para in Brazil, no noteworthy antimalarial effort appears to have been made in that part of South America. Dr. Oswaldo Cruz next describes five small antimalarial campaigns carried out in Central and Southern Brazil under the direction of the Institute of Manquinhos. The plans adopted were, (1) quinine prophylaxis exclusively, (2) quinine prophylaxis combined with isolation and thorough treatment of the affected, (3) the above measures combined with systematic sulphur disinfection of infected dwellings. Dr. Cruz states

that all the campaigns were crowned with the most complete success. Dr. Macdonald writes the next article, which is upon malaria in Spain. The disease prevails with great severity, in 1899 in one street of the city of Badajoz 500 people were attacked. The author notes that up to the present only a few railway companies and private individuals have undertaken measures, and that no municipality has organised a campaign. Malaria prevention in Italy is dealt with by Professor Celli, his account being a reprint of his article in the *Journal of Tropical Medicine* for April 1st, 1908. Antimalarial measures in Greece is the subject of an article by Professor Savas, who states that the fight against the disease in that country commenced when he founded an antimalaria league in January 1905. The policy adopted by the league has been quininisation on the Italian system. Professor Schilling next contributes an article on the prevention of malaria in German possessions. In those colonies "the first place is given to fighting malaria with quinine," and Professor Schilling notes that quininisation has been found to be the simplest and cheapest method. Dr. Seigert writes on antimalarial measures in the French colonies. Quininisation is the chief method adopted, and minor antilarval measures have also been carried out. In the next article Dr. H. C. Ross describes the campaigns at Ismailia, Port Said and Cairo. We do not doubt the success of the work at Ismailia, but we fear that Dr. Ross's account of it will be regarded as misleading. Although it is known that during the early years of the campaign the expenditure on quinine prophylaxis amounted to no less than two francs per head of the population, Dr. Ross does not mention the employment of the drug. He places the expensive work of draining the marshes as the first antilarval measure adopted, but according to earlier reports, those permanent works were not undertaken until after the *anopheles* had been extirpated by "a mosquito brigade of only four men, qui a tout fait" (Major Ross's report on malaria in Mauritius, page 81). The impression made by the earlier report is that the brigade of four men made the *anopheles* disappear at once, and that therefore the subsequent "permanent" works were unnecessary, the impression made by Dr. Ross's report is that the defeat of the *anopheles* was a task of the first magnitude, accomplished, with much honour to all concerned, by very extensive and radical measures of drainage and filling in of swamps. We regard it as unfortunate, also, that Dr. Ross's account contains no attempt to amplify the very scanty evidence upon which proof of success in the campaign rests. The campaigns at Port Said and at Cairo described by Dr. Ross were against *culex* and *stegomyia* mosquitoes, and there appears no good reason for their inclusion in a book dealing with the prevention of malaria. In

* Dr. Prout omits to state the source of this information. In an article published after the appearance of Major Ross's book Sir R. Boyce states that the Commission were authorised to spend only five hundred pounds, not five thousand. We do not doubt the correctness of Dr. Prout's statement, but some explanation on his part, or on the part of Sir R. Boyce, seems necessary.

this connexion we may quote the following from the report by the Director-General of Public Health in Egypt for 1909 "It is unfortunate that, owing to the loose statements and lack of accurate observation on the part of enthusiastic missionaries of mosquito enterprise, the ordinary urban antimosquito work such as that described above (*antriculex* and *antistegomyia* work in Cairo) has come to be regarded by the general public as an antimalarial measure. It is unfortunate because it magnifies and complicates the real malaria problem, and also causes the public to be unreasonable in their estimation of what they may rightly claim should be done for them by the State." We commend this report to anyone who desires to hear all sides of the antimosquito question in Egypt. Dr Balfour contributes an article on the campaign in Khartoum. Locally acquired malaria is almost unknown, and apparently the campaign is conducted as a safeguard against future possibilities. Dr Balfour says "Anophelines, now, as previously, are endeavouring to obtain a footing in the town and have been blown into it by the wind or brought into it by boats. As a result we have had a few cases, mostly in British soldiers who were wont to wander out to the east of their quarters towards a part of the river where there are extensive sand banks and many pools, some $2\frac{1}{2}$ miles from the centre of the city." We should have thought that, in the circumstances mentioned, a place $2\frac{1}{2}$ miles from the town would, perhaps, be the safest refuge, but possibly Dr Balfour means that the mosquitoes which were aviating or boating towards the town, met and infected the soldiers whose wont it was to wander away from it. Dr Balfour concludes by stating that Khartoum is a very favourable place for carrying Professor Ross's methods into effect, provided, among other things, that the work is conducted with intelligence. Dr Bostock deals with malaria in British South Africa. For Europeans, mosquito-proof houses, and for natives the free issue of quinine, have been the measures chiefly adopted. An article by Dr Muirson headed "Epidemic of Malaria in Durban 1905-1907," is open to much criticism. Durban has suffered from plague, but according to Dr Muirson, malaria, as a local affection, was unknown until January 1905, when the epidemic which forms the subject of the paper suddenly broke out. Twelve cases were notified in January, 85 in February, 612 in March, 1,084 in April, 1,877 in May, 497 in June, and 135 in July. Dr Muirson is silent as to the symptoms and fatality of the disease, as to the means taken to ascertain that it was malaria, as to the presence or absence of malaria parasites and of enlargement of the spleen, as to the presence or absence of *anopheles*, and as to every other point which would naturally be

investigated on the occurrence of an event so important and without precedent. Instead, he describes a number of drainage and other measures which cost approximately £80,000. He attributes to those measures the cessation of the epidemic. He notes that in 1908 no case of the disease occurred within the borough, but his next sentence is "Outside the borough, where the disease had been rampant the previous year, and where no preventive measures of any kind were being taken, no fresh case of malaria occurred, the disease seemed to have suddenly left Durban county." This sentence indicates that, whatever the epidemic was, the anti-mosquito measures carried out in Durban at a cost of £80,000 cannot, without further proof, be held to have brought about its cessation. For the next article Major Ross abstracts an account by Dr Malcolm Watson of the prevention of malaria in the Federated Malay States. Affirmation is the outstanding character of this article, which, in our view, contains but little that appeals to the reason. For a reasonable explanation, by Dr C A Bentley, of the successful results reported by Dr Watson, we refer our readers to the pages of No 2 of PAUDISM, recently issued. Dr Takaki is the last special contributor who has an article on specific antimalarial campaigns. He deals with the prevention of malaria in Formosa, the measures adopted being, (1) the general improvement of sanitary conditions in town and country, (2) protection by wire gauze and nets, (3) the prophylactic administration of quinine according to the method of Koch, (4) thoroughgoing post-malarial treatment.

In conclusion we must express our surprise that Major Ross has neglected to obtain an account of the antimalarial measures adopted in India, for, after a careful perusal of the accounts mentioned above, we consider that, from whatever aspect the prevention of malaria is regarded, India is well in advance of nearly all the countries whose efforts are enumerated. We much regret, also, that in view of the entirely uncritical attitude adopted by Major Ross towards campaigns that are reported as successful, we are unable to regard his remarks upon the Mian Mu campaign as quite fair, and we consider that it would be an earnest of his impartiality and of his desire for the truth if he would apply to some of the campaigns described in this book, a few of the criticisms he has applied so freely to the Mian Mu campaign. Until he does so we cannot acquit him of being free from a bias that is fatal to accuracy in scientific work.

Hints to Dressers—By MAJOR S ANDERSON, M.B., D.T.M., AND H.I.M.S. Calcutta Thacker, Spink & Co 1910 Price Re 1

THIS is an eminently practical little book. It aims at giving dressers in mofussil hospitals

an account of their work and what is expected of them and how to do it

It is written in clear and simple language and is well deserving of study by "dressers" and "compounders," and also it will prove of interest and value to many young Sub-Assistant Surgeons

The main facts of aseptic and antiseptic surgery are clearly and practically set forth "The rules for aseptic surgery" are excellent, and the instructions for the care of instruments are good and simple

In fact a wonderful lot of useful information is worked into this small book of 78 pages. We are sure it will prove of use and we recommend medical officers to obtain a copy for the use of their hospitals. The low price Re 1, of the book places it within the reach of all.

It is well and clearly printed

Die Kraukheiten der Warmen Lander — Von B SCHEUBE Jena 1910 Von Gustav Fischer

THIS handsome and up-to-date volume is a new, enlarged and revised edition of Dr B Scheube's well-known work on diseases of the tropics. Dr Scheube's work was one of the first books on this subject, and some of our readers will remember that when plague broke out in Bombay in 1896 so little was known of the disease that Scheube's chapter on that disease was translated and published in the Official Gazette by Government. Since then the book has passed through three editions and the volume now before us is the fourth. Some years ago there appeared an English edition of the book edited by Mr J Cantlie. We have gone through this new edition with care and with great interest and have been struck with the up-to-date nature of the information. The earlier editions were mines of information and the very complete summaries given of the literature on each disease is a valuable and useful feature of this volume. The maps are excellent and the illustrations generally good.

We can strongly commend this volume as up-to-date and reliable to all who read German. We have no doubt that it will soon appear in an English dress.

A System of Medicine — Edited by Sir CLIFFORD ALLBUTT and H D ROLFSON Vol VIII Macmillan & Co, Ltd 1910 Price, 25s net

THIS great system of medicine is nearing completion. The eighth volume, on diseases of the brain and mental diseases, is before us and another volume only remains on diseases of the skin to complete the work.

In the volume now under notice several important changes have been made. The article on meningitis by Dr Batten is quite new though in it he has used statistics and illustrations given in Sir T Burrow's splendid article on posterior basic meningitis in the first edition. Other new articles are Dr Batten's on acute polioencephal-

itis, on recurrent paralysis by Dr Michell Clarke, on apoxia and agnosia by Dr J Collin. The article on neurasthenia which was good before has now been revised and elaborated.

It is impossible to adequately review in a short notice such a volume as this. The very names of the authors of the articles are a guarantee, but some articles will seem to the reader better than others, and among those which we read with great pleasure are those by Sir Wm Gower's on epilepsy and paralysis agitans, on brain abscess by Edward Bramwell, on neurasthenia by Sir Clifford Allbutt, and of the mental diseases articles those by Dr Mercer on vice and crime, and the several articles by Dr Savage. Dr Nicolson's article on criminals is also very good, nor should we omit mention of Dr Risien Russell's article on the tics in the earlier part of this volume. This great *System* must for many years remain the great authority in the English language.

Urgent Surgery — By FELIX LEJARS, translated from the Sixth French Edition by W S DICKIE, FRCs Vol II, Plates 20 and Illustrations 994 Bustol John Wright and Sons, Ltd London Simpkin, Marshall, Hamilton, Kent & Co, Ltd

THE second volume of this work starts with a description of the urgent surgery of the genito-urinary organs, included in this section are the indications for urgent enucleation of the uterus, colpotomy, extravasation and retention of urine, various injuries of the organs concerned, etc, etc, with their appropriate treatment. The procedures recommended are well and clearly described, the section on rupture of the urethra being particularly good. Various ingenious methods for the removal of foreign bodies from the urethra are also included.

Section VIII deals with the rectum and anus, ano-rectal imperforations comprise a large portion of it, the author emphasizes the view that an artificial anus in the iliac region should be nothing but a last resort.

Section IX considers the important subject of strangulated herniae, the author is very emphatic that every strangulated hernia ought to be operated on at once, and that only in very exceptional cases should taxis be employed, and then if it fails, the operation of hemiotomy should be immediately proceeded with. There is no doubt that if this practice were carried out the mortality would be very considerably reduced.

It is preferred that the sac should be opened with scissors and that the constriction after division of the external oblique saponification should also be dealt with by the same instrument, it being only in exceptional instances that the probe pointed hernia knife is still the best weapon.

The methods to be followed in an ordinary straightforward case are first described, and then those in which there are complications, the advice given is throughout excellent. The

rarer varieties of strangulated herniae are also very carefully dealt with.

The remainder of the book treats mainly of fractures and dislocations, the procedure in the various methods of reduction of the latter are well and carefully described.

In the treatment of fractures plaster of Paris is largely employed but generally speaking splints are applied for as short a time as possible. Fractures of the patella if the patient refuses wiring are treated by massage, the author speaks well of the results obtained by encasing the fragments with wine. The chapter on open reduction and reunion of fractures well repays careful reading, the author does not employ this treatment as a routine measure, but uses it whenever necessary, the class of case in which operation is desirable and the needful technique are concisely given.

There are also sections on crushing injuries, urgent amputations, burns, etc. The author is very rightly strongly opposed to primary amputations and advises very careful and minute cleansing of the injured part followed by embalming with dressings soaked in alcohol.

In conclusion, this volume is of the same high standard of excellence as the first, and can be as thoroughly recommended either to the general practitioner or to the man in active surgical practice.

A Manual of Surgical Anatomy.—By CHARLES R. WHITTAKER, F.R.C.S. (Ed.), Senior Demonstrator of Anatomy, Surgeon's Hall, Edinburgh. Crown 8vo, pages x, 248, with 48 illustrations. Messrs E & S Livingstone, Edinburgh.

THIS little book on Surgical Anatomy is written mainly for students. It amply fulfils the claim made by the author that it provides useful outlines to be filled in by the study of larger works. The value of the book would be enhanced by the inclusion of more surgical matter, this would not necessarily mean increasing its size appreciably. Those who have had much experience of X-ray work, will not agree with the stereotyped teaching that foreign bodies in the oesophagus are most likely to become impacted opposite its commencement, opposite the left bronchus, or at the diaphragm.

Manual of Clinical Pathology.—By R. WEISS, M.A., Ph.D., F.C.S. London J & A Churchill. Price 2s, paper covers.

UNDER the above comprehensive and indeed misleading title a very useful little pamphlet is published by Mr. R. Weiss, a consulting chemist, assisted by Dr. G. Herschell and Mr. A. Charles, F.R.C.S.I. It deals with the use of laboratory methods in daily practice. For example, 27 pages are given to urine analysis, another section to analysis of stomach contents, ten pages to analyses of faeces, and a useful contribution in blood examination.

The pamphlet is a mass of useful information which well deserves a less misleading name and a better binding.

A Study in Troop Leading and the Management of the Sanitary Service in War.—By Major J. F. MORRISON, General Staff, U.S. Army, and Major E. L. MUNSON, Medical Corps, U.S. Army Fort Leavenworth, Kansas, U.S.A. Cloth Price 1½ dollars.

THIS little volume is another indication of the advances now being made in perfecting the Medical and Sanitary Department of the Army of the United States of America. It has been officially adopted by the War Department of the United States and every medical officer of the U.S. Army has been furnished with a copy.

It has also been approved of for use by line officers—and we certainly think it will lead to a better appreciation by the combatant branches of the understanding and co-operation which it is necessary should exist between them and the medical department.

It is eminently practical, and is intended to illustrate, under assumed actual battle conditions the co-operation needed between the leading of troops and the sanitary service. In part I, the assumed general situation of the rival armies is explained and the organisation of the First Division is detailed. Then the special tactical situation is explained, the orders of the General are given, the conference of the Chief Surgeons of the Division is given—the plans of the General are described and the Chief Surgeon's medical arrangements to meet assumed actual state of affairs are described.

Then comes the fight of the next day and the tactical management of the sanitary personnel and equipment up to the capture of the place attacked, then follows the pursuit of the enemy and the partial sanitation of the battlefield and the various relief agencies. After the pursuit comes an account of the service of evacuation—disposal of dead—removal of wounded, etc.

The book is thrown into a narrative form, which makes it realistic and life-like, all the orders are given just as if it was a history in detail of an actual fight.

We strongly recommend this little book to medical officers in military employment. We would like to see it on the anteroom tables of officers' messes. It will prove interesting and instructive to all branches of the army.

Foods and Feeding in Health and Disease.—By CHALMERS WATSON, M.D. Edinburgh Oliver and Boyd, 1910.

THIS is an eminently practical book. It treats of the elements of physiology and the nature of foods, and gives an account of the practical usages and processes of the kitchen.

It practically consists of two parts, the first being devoted to food and its functions, digestion, daily amount required, foods of various

kinds—with a useful chapter on "patent"—proprietary and pedigreed foods. Then follow excellent chapters on diet at different periods of life, as underfeeding and overfeeding and food for invalids. The rest of the book contains articles on diet in fevers, during convalescence, in diseases of the stomach and intestines, liver and pancreas, anaemia, heart, kidney disease, etc. Especially good are the chapters on obesity and on special diet cures.

Altogether the book compares very favourably with other older books on the same subject and is one which can be recommended with confidence to our readers.

The Diseases of the Skin—By E GAUOHER, Professor of Dermatology and Physician to the St Louis Hospital, Paris, translated by C F Marshall, F R C S

THIS is a book which is written chiefly from the point of view of a European physician. Regarded as such, it is a useful work of moderate size, coming between the smaller books which profess to be merely introductions for the use of students, and the larger text-books, such as that of Stelwagon. The descriptions of the pathology and symptomatology are sufficiently full for general practice. They are clear and free from lengthy discussions which are of use to specialists only. Some space is devoted to X-ray light, and radium treatment, on the other hand in dealing with the ordinary medicinal methods, the author does not give many alternative lines of treatment, and in some cases the methods given are not described with sufficient fulness. For instance, the chrysarobin treatment of psoriasis receives only a few words of description and no indication is given of the extent to which the dermatitis produced by the drug is to be allowed to proceed. There is no reference to vaccine treatment in acne, syrosis or tubercle.

There are numerous uncoloured illustrations, many of which are as good as uncoloured illustrations of skin diseases can be. There are, however, no coloured plates, one of which is of more value than many photographs.

Among diseases of the tropics, special sections are devoted to elephantiasis, oriental boil and tropical ulcer and jaws. Leprosy which contributes so large a number of cases in skin practice in India is not dealt with separately, although it is frequently mentioned in the diagnosis of other diseases. The phrase "Dhobie's Itch" does not occur in the volume.

A Study of the After-results of Abdominal Operations on the Pelvic Organs, based on a series of 1,000 consecutive cases—By ARTHUR E GILES, M D, B SC Lond, F R C S England Published by Bailliere, Tindall and Cox

THIS volume is a reprint from the *Journal of Obstetrics and Gynaecology of the British Empire* of a series of articles in which Dr.

Giles published the results of a laborious enquiry, extending over ten years, into the after-history of his patients. The conclusions arrived at are of interest not only to the profession but also to the lay public who need to be disabused of the idea that even though the immediate results of these operations are good, there needs must follow a life of lesser troubles if not of chronic invalidism. Most reassuring are the inferences of Dr Giles, and, in so far as they are based on the statements of patients themselves regarding their after condition, they may be accepted off hand, but it is very much to be desired that other surgeons should make and publish similar enquiries in order that their conclusions should be correlated with those of the author, that one should act as corrective to another. It would enable the profession to strike a just balance between conclusions into which the personal bias inevitably enters. We have no cynical contempt for statistics, but that they are apt to be vitiated might be proved from the very volume before us in which we read that "a patient who was operated upon for advanced malignant disease died on the seventh day of the progress of the disease." Nevertheless we are convinced that the author endeavours to give a faithful account of his patients, to be as strictly judicial as possible. Statistics are dry reading, but the conclusions arrived at are summarized at the end of each chapter, and these will in every case be found instructive. Dr Giles is conservative in his surgery. In the light of recent publications it is interesting to note that his results fully justify those who refuse to follow Doyen's lead in doing a complete hysterectomy rather than the supravaginal. The volume is well edited and printed and will be useful to workers in gynaecology.

The Pathology of the Living and other Essays—By B G A MOYNIHAN, M S, F R C S Published by W B Saunders & Company

FROM the preface we learn that the author's friends are responsible for the issue in book form of these reprints of old addresses. They preceded Mr Moyihan's more detailed publications, one of which we recently reviewed. It naturally follows that the essays are comparatively crude productions though interesting as forerunners of the more mature opinions and teaching of a distinguished surgeon.

Occasional addresses do not always make good reading. "The Pathology of the Living" leaves one with the impression that a surgical platitude has been delivered. Medical men do not need to be told that abdominal sections have revealed earlier stages of visceral disease than can be seen in the dead at autopsy. The moral of the address is "Follow your patients to the operating table." Surgical findings must be seen by the general practitioner and nongeneral symptoms must be co-ordinated with them in

order that there shall be earlier resort to the surgeon. This is the gist of what is preached throughout these essays. It is not unnatural that a brilliant surgeon should have the surgical bias, make surgery an end, but we are loth to believe this of the student of philosophy who prefers the platonic term, Anamnesis, to our rude Anglo-Saxon phrase, 'previous history.' There is in fact too strong a flavour of surgical self-glorification about these essays. They are valuable so far as they give a synoptic account of portions of abdominal surgery, but they are otherwise scarcely worthy of either author or publisher.

Military Hygiene—By Major R. CALDWELL, M.C.S., D.P.H., R.A.M.C. London Baillière, Tindall & Cox, pp. xiv + 580 Demy 8vo, price 12s 6d net 2nd Edition 1910

THIS is a new, revised and enlarged edition of Major Caldwell's well-known book on Military Hygiene. It gives a good account of those principles of sanitation which most nearly affect the soldier in his every-day life, whether at home, abroad or in the field. Though primarily written for medical officers of his own Corps it is also hoped that it will be useful to officers of other branches of the Army.

It is to be regretted that more attention has not been paid to conditions of service in India and to the Indian Army, an omission which somewhat detracts from its usefulness to Indian Medical Service Officers.

Nevertheless the book is a valuable one, the chapters on malaria, enteric fever and several tropical diseases are excellent.

We can strongly recommend this volume to all our readers in military employ.

Syphilis—its Diagnosis and Treatment—By Colonel F. J. LAMKIN, R.A.M.C., London, 1910 Baillière, Tindall & Cox Demy 8vo Pp. vi + 195 Price 5s net

THIS is an admirable book and strongly to be recommended to our readers. It is brief, clear and to the point with no padding put inside the compass of 200 pages and gives a very complete account of syphilis, its pathology, clinical course and treatment.

The name of Colonel Lamkin is well known as an expert on Syphilology, and his name is associated with the intramuscular method of administering the specific (*pace* "606") Mercury.

The brief historical note is of interest. Syphilis if we are to trust the vague writings of *Susruta* was known in India 1000 B.C., it is supposed to have been known to the ancient Hebrews, but no sure evidence in the way of bones affected by the disease has yet been produced to shew its prehistoric existence.

There is no doubt, however, that the introduction of syphilis into Europe coincided with the

epoch of the discovery of America in 1492 by Columbus. It has been proved, says Colonel Lamkin, beyond doubt that it was brought into Spain by the sailors of Columbus who acquired the disease in Haiti and Central America and from Spain it spread to Italy, and it was brought to England by sailors and soldiers who had been employed as mercenaries in the Italian wars of the Emperor Charles VIII.

The chapters on the clinical course of the disease and of its differential diagnosis are excellent and well written as is also the section on pala-syphilis or quaternary syphilis, as our author calls it.

The chapters on the treatment of syphilis are especially practical and that of general treatment is full of useful point, a full account is given of old and modern methods ofunction, including that at Aix-la-Chapelle.

The arguments for and against the intramuscular method are ably summed up in Chapter XII and its technique is clearly detailed.

In Col. Lamkin's latest formula there is added "*equal parts of absolute creosote and camphoric acid*" "A combination which had proved altogether a complete success as it renders the injections even of calomel quite painless." The following is his latest formula—

R Hydrarg per	10 grammes
' Creo camph'	. 20 c.c.
Palmitin bases ad	100 c.c.
(Ten minimæ—1 grain of metallic mercury)	

The mixture is sterile, it gets semi-solid in a cold climate and liquid in a hot climate, under the latter conditions, the bottle should be kept in the ice chest.

Col. Lamkin's calomel cream which now when used with "creo-camphor" (as above) is painless, consists of purified calomel 5 grammes, "creo-camph" 20 c.c. and palmitin bases up to 100 c.c., and ten minimæ of this equal half a grain of calomel. The action of calomel, however, is shortlived, and nothing will replace the metallic mercury in the treatment of syphilis. We strongly recommend these chapters to our readers. In these days of the belated "606," a word must be said of other arsenic derivatives, which have had their vogue, e.g., atoxyl and soamin, the former is dangerous, the latter decomposes rapidly and Col. Lamkin prefers another Ehrlich discovery, viz., arsenetin (an acetyl derivative of atoxyl), and in 250 cases treated at the Rochester Row Hospital the results were good. Combinations of arsenic and mercury have also proved to have given "brilliant results," and Col. Lamkin at present is using a preparation called atoxylate of mercury. These arseniates are a boon to those who from idiosyncrasy cannot tolerate mercury, or in persons broken down by malaria or other tropical influences.

We can strongly recommend this cheap, valuable and practical book to our readers.

A Manual of Physiology—By G. N. STEWART
Sixth Edition Demy 8vo Pp. XX—1064 Illustrations 449, with coloured plates Price 18s net London 1910 Baillière, Tindall & Cox

WHEN we reviewed the 5th edition of this admirable Manual of Physiology we expressed our very high opinion of it—a view evidently shared by students as no less than six editions of this work have been sold off since 1896. In the present 6th edition the text has been entirely revised and in many places re-written and the book has increased slightly in size.

The great feature of the book is the Practical Exercises—which are extremely well selected, and the book is so written that the systematic portion of the book can be used quite independently of the practical exercises.

The book in its new form will recommend itself as one of the best of Manuals to students and can be relied upon by practitioners who wish to look up points of physiology.

The book is a great success, it is handsomely got up in Messrs Baillière, Tindall & Cox's well-known University Series.

Physiology and Pathology of the Semi-circular Canals.—By ADOLPH E. IBERSHOFF, M.D., and a foreword by ROYAL S. COPFLAND, A.M., M.D. New York Paul B. Hoeber, 1910, pp. 64, with 8 figures \$1.00 net.

THIS small brochure is an excerpt of the clinical studies of Dr Robert Bauany with notes and addenda gathered from the Vienna clinics. The researches of Ewald and Höegyes and all the work done since are described and the important advances in our knowledge of labyrinthine physiology and pathology clearly emphasised. Nystagmus is either oscillating due to ocular defect, or rhythmic in which there is a slow and rapid movement of the eyes. This nearly always emanates from the vestibular apparatus. This nystagmus can be intensified by rotating the patient, applying cold to the external meatus, etc., and the behaviour of this 'turning' or 'caloric' nystagmus is used in the diagnosis of the disease causing it. The treatment of labyrinthine disease is briefly dealt with also. A number of figures make the text clear and are original and useful. The importance and value of these nystagmus tests has no doubt been exaggerated, but they are a valuable addition to our methods of diagnosis all the same, and this brief account of the latest known about them is worth reading.

Dyspepsia, its Varieties and Treatment—
By W. SOLTAN FENWICK, M.D. W. B. SAUNDERS & Co., 1910

THIS handsome volume by Dr Soltan Fenwick is the outcome of sixteen years' work on the subject.

There is a universal disposition to regard the condition called dyspepsia as dependent upon a primary failure of the gastric functions, whereas

in most cases, the symptoms originate entirely in the intestines and ensue from a derangement of the liver, pancreas or bowel.

The volume begins with a chapter on the varieties of dyspepsia and their diagnosis, and our author divides them into dyspepsia due to (1) abnormalities of secretion, hyperacidity, hypersecretion, achylia, (2) dyspepsia due to failure of muscular power of the stomach, (3) due to inflammations of the stomach, (4) to nervous disturbances of the mechanism of the stomach, (5) due to displacements of the stomach, (6) to presence of foreign bodies, and dyspepsia dependent upon diseases of other organs, e.g., plithesis, heart disease, kidney trouble, etc., etc.

Two other chapters deal in a complete manner with dyspepsia in infancy and in old age and with intestinal indigestion.

The chapter on displacements of the stomach is very satisfactory and the various methods of treatment for these distressing conditions are clearly explained and the fact is emphasised that gastropathy exists in many persons who never suffer from dyspepsia, so that perfect digestion is compatible with an abnormal position of the stomach.

The book is a valuable one and will well repay careful study. It is well got up like all the books published by the firm of W. B. Saunders & Co.

SPECIAL ARTICLE

DOCTORS IN PARLIAMENTS

[U—Unionist, R—Radical, N—Nationalist]

BARELY eleven months after the last, Great Britain has again been plunged into a general election in December 1910, the second within the year. The late Parliament has been one of the shortest on record, certainly the shortest for a quarter of a century past, since that of 1885. In one respect it has probably established a record, in the many by-elections which occurred during its existence, not a single seat changed sides. The late election must have also made a record, in the very small party gains and losses. Never before was such a case of "as you were." The most successful parties have been the Nationalists, who have increased from 73 to 76, and the Labour-Socialists increased from 40 to 42. The Independent Nationalists have diminished from nine to eight, having retained almost the whole representation of Cork County eight seats out of nine. The Unionists are one to the bad, with three seats lost in London, and two in Ireland, one gained in Wales, and three in the rest of England, Scotland remaining the same. The official Radical party is three to the bad. In all, the Unionists won 28 seats, chiefly in Lancashire and the West of England, and lost 29.

In January 1910, fourteen (*) members with medical qualifications were returned. One of them, Sir Balthazar Walter Foster, has since been raised to the peerage. The other thirteen all faced the electors again, and all but one, Sir William Collins, with success.

Eight other medical candidates appeared in the field, of whom two, both Nationalists, were successful, the others failed. Five of them had been unsuccessful last January also. Sir Henry Lunn, Sir Alexander Simpson, Surgeon-General Evatt, Drs Eastham, Keightley, and Rutherford, who were unsuccessful candidates last January, did not stand on this occasion.

The successful candidates are the following —

I Dr Christopher Addison, (R), Hoxton, MRCS and LRCP, 1891, MB, BS, London, 1892, MD, 1893, FRCS, Eng., 1895, Lecturer on Anatomy, St Bartholomew's, won the seat at Hoxton in January 1910, and now retains it.

II Dr William Allen Chapple, (R), Stirling County, MB, BCh, New Zealand, 1890, MD, 1897, MRCS, 1897, DPH, RCPSI, 1897, gained his seat in January 1910, and retains it.

III Mr John Dillon, (N), East Mayo, LKQCP, MP, for Tipperary, 1880-85, for East Mayo since 1885, name not in Medical Directory.

IV Mr Charles Henry Dixon, (U), Boston, gained his seat in January 1910, and retains it. His name is not in the Medical Directory, but the *British Medical Journal* of 17th December 1910, includes his name among those of successful medical candidates.

V Dr J Esmonde, (N), North Tipperary, returned for the first time.

VI Sir Robert Bannatyne Finlay, (U), Edinburgh University, MB, Edinburgh, about 1865, name not now in Medical Directory, called to the Bar 1867, MP, Inverness Burghs, 1885-1892, and 1895-1906, for Edinburgh University since January 1910, Solicitor General, 1895-1900, Attorney-General, 1900-1906, Lord Rector of Edinburgh University, 1902-1904, Knighted, 1895, GCMG 1904, LL.D., Edinburgh and Privy Councillor.

VII Dr Alfred Peter Hillier, (U), North of Hitchin Division of Hertfordshire, BA, Cape of Good Hope University, 1877, MB, CM, Ed., 1882, MD, 1884, served as a trooper in the Zulu war of 1878-79, Member of Reform Committee, Johannesburg, and political prisoner at Pretoria, 1895-96, unsuccessfully contested Stockport in 1900, won his present seat in January 1910.

VIII Mr Arthur Lynch, (N), West Clare, MA, Melbourne, MRCS, and LRCP, war correspondent in Ashanti war, commanded the

Irish Brigade of the Boer forces in the South African war, MP, Galway, 1901-1906, elected for West Clare at a by-election in 1909, name not now in Medical Directory.

IX Dr Charles O'Neill, (N), South Armagh, MB, MCh, MAO, RUI, 1886, DPH, RCPSI, 1891, Asst Professor of Botany, St Mungo's College, Glasgow, since 1897, returned for his present seat in January 1910.

X Sir George Herbert Pollard, (R), Eccles, Division of Lancashire, MB, CM, Ed., 1886, MD, 1890, called to the Bar, unsuccessfully contested Southport in 1893, and the Radcliffe Division of Lancashire in 1895, in 1906 gained the seat at Eccles, which he still holds.

XI Sir Robert John Price, (R), East Norfolk, MRCS, 1876, called to the Bar, 1883, elected for his present constituency in 1892, and has retained the seat ever since. His name no longer appears in the Medical Directory.

XII Dr Adam Rolland Rainy, (R), Kilmarnock Burghs, MB, CM, Ed., 1886, elected in 1906 for his present seat, and still retains it.

XIII Sir George Scott Robertson, (R), Central Bradford, LSA, 1876, MRCS, 1877, entered the Bengal Medical Service as Surgeon on 30th March 1878, Surgeon-Major, 30th March 1890 Surgeon-Lt-Colonel, 30th March 1898, retired 22nd October 1899, served in Afghanistan, 1879-80, operations in and around Kabul in December 1879, affan of Shekobad, and operations in Kohistan, medal with clasp, N-W Frontier of India, 1891-92, Hunza Nagar, as Chief Political Officer, mentioned in despatches, GGO No 397 of 1892, medal, and CSI, 25th May 1892, Chitral, 1895, as British Agent, defence of Chitral Fort, wounded, received thanks of Government of India, mentioned in despatches, GGO No 531 of 1895, KCSI, 17th July 1895. He is also DCL of Toronto University. He unsuccessfully contested Stirling county in 1900, in 1906 he was elected for his present seat, which he still retains.

The following candidates were unsuccessful:

I Dr George Coats, (U), Camborne, Cornwall, MRCS, 1878, MA, Oxon, 1878, MB, 1878, MD, 1886, unsuccessfully contested the Lichfield Division of Staffordshire in January 1910.

II Sir William Job Collins, (R), West St Pancras, MRCS, 1880, FRCS, England, 1884, BSc, London on 1880, MB, BS, 1881, MD, 1882, MS, 1885, Cert in Public Health, 1887, late lecturer on Anatomy, St Bartholomew's, now Surgeon to the Royal Eye Hospital. He was a member of the London County Council from 1892 to 1906, Chairman in 1897-98, and a member of the Royal Commission on vaccination from 1899 to 1906. He was knighted in 1902, unsuccessfully contested West St Pancras at a by-election in 1905, won the seat in 1906, held it in January 1910 by the

(*) In the list of medical members of Parliament published in the *Indian Medical Gazette* for March 1910, p 104, the name of Mr C H Dixon was omitted, also that of Mr A Lynch.

narrow majority of ten votes, and has now lost it by the even smaller margin of eight

III Dr Josiah Court, (U), North East Derbyshire, M.R.C.S., 1863, L.R.C.P., 1864, his fifth unsuccessful attempt in this constituency

IV Sir Victor Alexander Haden Horsley, (R), London University, M.B., B.S., London, 1881, F.R.C.S., England, 1883, also M.D., Halle, and F.R.S., Surgeon to the National Hospital for Paralysis and Epilepsy since 1886, formerly surgeon to and professor of clinical surgery in University College Hospital, Consulting Surgeon and Emeritus Professor since 1906

V Dr John Elsdale Molson, (U), North East Bethnal Green L.S.A., 1899, M.R.C.S. and L.R.C.P., 1890, M.B., B.C., Cantab., 1891, M.D., 1895, unsuccessfully contested the same constituency in January 1910

VI Dr Robert Oswald Moon, (R), East Marylebone, M.R.C.S. and L.R.C.P., 1896, M.B., B.C.H., Oxon, 1899, M.D., 1900, F.R.C.P., London, 1909, Physician to the Western General Dispensary in Marylebone, and to the Hospital for Diseases of the Heart in Soho-Square. He served as surgeon to the Phil-Hellenic Legion in the Greco-Turkish war of 1897, as a trooper in the Hants Yeomanry in 1900, and as a civil surgeon in 1901, in the South African war. He stood without success for the same constituency in January 1910

VII Dr William Peimewan, (R), Walton Division of Liverpool, L.S.A., 1886, M.B., London, 1886, M.D., 1888, F.R.C.S., England 1889, D.P.H., Cantab., 1892. He fought the Bootle Division of Lancashire unsuccessfully in January, 1910

Many of the above members and candidates are doctors in name only. Sir Robert Finlay, Sir George Pollard, and Sir Richard Price, have long ago abandoned medicine for the more lucrative profession of the Bar. Messrs Dillon, Lynch, and Rainy, are politicians pure and simple. Drs Chapple, Court, Hillier, Molson, Mr Dixon and Sir George Robertson, have retired from active practice. The names of Finlay, Dillon, Dixon, Lynch, and Price, have dropped out of the medical directory. Only Dr Addison, Coats, Sir W. Collins, Sir V. Horsley, Moon, O'Neill, and Peimewan, appear to be still in practice, and only three, Coats, Moon, and Peimewan, in what may be called the ordinary practice of their profession, the others being specialists.

As regards their politics, six successful and three unsuccessful candidates are Radicals, three successful and three unsuccessful are Unionists, and four, all successful, are Nationalists. It may be noted that Mr John Redmond, the leader of the Nationalist party, and his brother William, were once medical students, though we believe that neither of them ever qualified.

Several other candidates, who have the prefix of doctor before their names, are not, we believe, medical men. Dr R. W. Ashe, (R), Central Hall, Dr C. Brooks, (R), Mid-Worcestershire, Dr A. E. W. Hazel, (R), West Greenwich, sat for

that town for 1906-1910, lost the seat in January 1910, and in December 1910 again failed by only five votes, his degree is LL.D., Oxon., and Dr C. M. Douglas, D.Sc., Edinburgh, a son of the late Dr Halliday Douglas, a well-known Edinburgh physician, sat as a liberal for North-West Lanark from 1899 to 1906, and now stood as a Unionist for South Lanark. All the above were unsuccessful. Dr Charles Leach, who was elected for the Culne Valley Division of Yorkshire in both January and December 1910, is a Nonconformist Minister and a D.D.

The number of candidates connected with India, at the late election, has been much smaller than usual, only five, we think, all told, of whom four were successful. Colonel I. Phillips, (R), Southampton, Sir John Jardine, (R), Roxburghshire, late a Judge of the Bombay High Court, and Sir George Robertson (R), Central Bradford, late I.M.S., were all elected in 1906, and have retained their seats up to the present. Colonel C. Yate (U), in the Melton Division of Leicester, has won a seat, at the third time of asking. He contested the same seat in January 1910, and Pontefract in 1906, without success. Mr M. C. Mullick, a Bengali Barrister, stood as a Radical for the Uxbridge Division of Middlesex in December; he also contested the St. George's Division of Westminster in January 1910, both very forlorn hopes, and naturally unsuccessful.

The number of men, retired from the Indian Medical Service who have sat in the House of Commons, is very small, only six, we think, in all, of whom four were Bengal men, one belonged to Prince of Wales' Island service, and one to Bombay. Madras seems not to have been represented at all. But three out of these six, as will be seen from the dates given below, cover no less than sixty-five years out of the past century.

Their names and dates are as follows —

I Joseph Hume, (B, 1799-1808) Weymouth, (Tor), 1812

Montrose Burghs, (R), 1818-1830

Middlesex, (R), 1830-37, (defeated 1837)

Kilkenny Town, (R), 1837-1841

Montrose Burghs, (R), 1842-55, (died 1855)

II John Fleming, (B, 1768-1813) Gatton, 1818-1820, (retired 1820)

III Charles Nealkinuon, (P.W.I., 1807-21) Ipswich, 1826-34, (died 1834)

IV Sir John Trevor Lawrence, (B, 1854-66) Mid-Surrey, (C), 1875-1885

Surrey, Reigate Division, (C), 1885-92, (retired 1892)

V Sir William Guyer Hunter, (B, 1850-80) Central Hackney, (C), 1885-92, (retired 1892)

VI Sir George Robertson (B, 1878-1899) Central Bradford, (R), 1906 to the present

Several other retired I.M.S. officers have sought the suffrages of the electors, from time to time without success. Brigade-Surgeon J. E. T. Aitchison, (Bengal, 1858-1888), stood as a

Liberal Unionist for the Counties of Kincross and Clackmannan in 1892 Lieut Colonel Oliver Duke, (Bengal, 1869-1887), contested the South or Luton Division of Bedfordshire three times, at the general elections of 1892 and 1895, and at a by-election, reducing the majority against him each time, and also stood for the Stirling Burghs in 1900. And Sir George Robertson, as stated above, failed in Stirling County before he was successful in Bradford.

Literary Notes.

CLAUD MARTIN AND THE OPERATION FOR STONE

It is well known that the famous Franco-Anglo-Indian soldier of fortune, Major General Claud Martin, to whose generosity is due the foundation of the two La Martiniere schools at Calcutta and Lucknow, suffered severely, in his later years, from vesical calculus, and that he invented an instrument by which he was able to perform some kind of an operation of lithotomy on himself. Two accounts of this operation are given in the *Asiatic Journal** in the first year of its publication. The reproduction of these accounts may be of interest to the readers of the *Indian Medical Gazette*.

The first account is contained in an article "On the Diseases of India, and the use of the Nitro-Muriatic Acid," by Dr H. Scott, ‡ which is stated to be itself taken from a paper printed in the *Journal of Science and the Arts*, entitled "Some remarks on the Arts of India." The portion of this paper which deals with stone, and contains the account of Martin's operation, runs as follows —

"STONE.—The formation of stones in the urinary bladder is nearly unknown between the tropics. I have indeed not met with a single instance of it, although I have known some cases where a disease was imported, and not removed by climate. This exemption, however, from those dreadful diseases does not extend through a great extent of latitude, and it should also be remembered that altitude above the sea has similar effects to a more northern latitude. I speak of my experience, in a country on a level nearly with the ocean, and having a barrier of ghauts † or mountains towards the east. In the northern parts of India the maladies of Europe begin to show themselves. I knew a boy who got a stone in the bladder in Guzerat, for which he had been cut by a native

* *The Asiatic Journal and Monthly Register for British India and its Dependencies*. London, printed for Black, Parbury, and Allen, Booksellers to the Honourable East India Company, Leadenhall street, 1816. 8s. The *Asiatic Journal* begins in January 1816, and consists of monthly numbers bound in half yearly volumes. Dr Scott's paper is printed in Vol II, July to December 1816, in August, pp. 124-131.

† Holonus Scott, Asst Surgeon, Bombay 13th Jany 1783, M.A., Marischal College, Aberdeen, 1777, M.D., 1805, L.R.C.P. Lond, 1815, Member, Medical Board, 19th April 1801, Retired 30th March 1810, Died on voyage to New South Wales, 16th November 1821.

‡ Italics and spelling throughout as in the original.

surgeon. The perforation was made nearly the same place that it is in Europe, and the operation was what is called, I think, by the *Gripe*.

"I may take notice here of a case of stone in the bladder (it cannot be too often mentioned) which was remarkable for the singular mode of cure adopted by Colonel Martin, himself the sufferer. He then resided at Lucknow, but I believe the Colonel had lived in many of the northern parts of Hindostan. I know well a surgeon" of the Company's service, who was intimate with the Colonel, and visited him at all hours, and often saw him carrying on his process for cure. It consisted in reducing the stone to powder, by a fine saw introduced into the urethra by means of a canula, and he perfectly succeeded in removing the whole of it. The Colonel was an ingenious mechanic. His saw was made of the steel spring of a watch. He introduced the canula till it touched the stone, and then, by changing the position of his body, he pushed on the saw till it was, for a little way, in contact with the stone, and then moving it backwards and forwards, he reduced it to powder. My friend often saw him at this work, and occasionally more than once on the same day. The operation gave him no pain whatever, for soft parts plentifully covered with mucus, are under very different circumstances from hard and resisting bodies, and completely elude the teeth of so fine a saw. Soon after every sawing, he passed, with his urine, a quantity of the stone, in the form of a powder. Although a parallel case will not often occur, where the patient is so intelligent and ingenious, and the final success so decisive, yet by long habit, and guided by the feelings known only to the individual, I should hope that a similar mode might sometimes be applied with advantage. No surgeon can effect this for another person. To place the stone and the saw in the proper positions, and to carry on the operation with success, and without pain or injury, can only be done by the patient himself. The hopes of relief, the attentions and observations necessary to attain it, the repeated trials, with all the sources of employment and of comfort to a miserable man, may well reward him, even if the perfect success of Colonel Martin should be unattainable." Footnote by Dr Scott — "Since writing the above, I have conversed with a very intelligent officer of high rank, who knew the Colonel intimately. He tells me that the instrument for reducing the stone to powder was rather a file than a saw, and that it was fixed to the end of a piece of whale bone. It was passed into the bladder through a canula. So accurately from habit could the Colonel judge of every circumstance that he could tell when any part of the surface of the stone became more elevated than the rest, and could remove that part with the greatest nicety. On speaking to a friend now in town, who also was intimate with Colonel, he was told that the filing part of the instrument was made of a knitting needle, properly tempered for the purpose."

When Scott speaks of the rarity of stone in India, we must remember that his experience was entirely confined to the city of Bombay and its immediate neighbourhood. Any one who has served both in Upper India, and in Lower or Eastern Bengal, must have noticed the rarity of vesical calculus in Bengal proper, as compared to the Punjab, Oudh, the United Provinces, and even to Bihar. The development of litholapaxy, one of the most successful of modern operations forms a singular contrast to Scott's remark that "no surgeon can effect this for another person." But this development would not have been

* Footnote by Dr Scott. "Mr Bright"—Edward Bright Asst Surgeon, Bengal, 1783 (exact date uncertain), died in Calcutta, 25 July, 1789.

possible without anaesthetics, the discovery of which was still in the distant future when Martin died and when Scott wrote.

The second account is contained in the same volume, in an article entitled "Authentic Anecdotes of the Life of Major-General Claudio Martin," December 1816, pages 567-570. It tells a somewhat different story from Dr. Scott's, as it says that Martin suffered great pain during the self-performed operation, and that, though he got rid of the stone completely, a recurrence some years afterwards proved fatal.

"During the last fifteen years of his life, he was much afflicted with the stone and gravel, and dishing to undergo the usual surgical operation for that complaint, his ingenuity suggested to him a method of reducing the stone, so curious in itself, and so difficult in its execution, that we should have doubted the fact, were it not attested by the most positive evidence of several gentlemen of the first respectability. He took a very fine stout wire of about a foot long, one end of which he cut in the manner of a file. The wire thus prepared he introduced by a catheter, through the urethra, into the bottom of the bladder, where the stone was seated. When he found the wire struck the stone, he gently worked the wire up and down, so as to give it the effect of a file, and this he continued to do for four or five minutes at a time, until the pain which the operation of the wire produced, was so excruciating that it obliged him to withdraw it. But finding small particles of the stone discharged along with the urine after the operation, he repeated it in the same manner from time to time till, in the course of twelve months, he succeeded in completely reducing the stone."

"This circumstance exhibits a curious and remarkable trait of the eccentricity of his character. The contrivance was in itself ingenious, but his patience and perseverance in carrying it into effect, are so very extraordinary, that we apprehend there are few men, who, in a similar situation, would not rather endure the complaint than have recourse to the remedy."

"Some years after the operation gravelly concretions began again to form in his bladder, and as he did not choose to try the wire a second time, these continued to increase until the end of the year 1800, when they occasioned his death."

LITHOTOMY BY THE "GRYPE" OPERATION IN 1818.*

"Operations for the Stone by a Native Doctor.—Extract of a letter dated Muttra, October 13, 1818.—A native Hindoo doctor has performed a surgical operation here, in a very dexterous and able manner. The other day, a boy of about 13 years of age, the son of one of the bazaar servants, had for a long time been afflicted with the stone, and was getting worse and worse daily. The father sent for a native doctor, who lives in one of the Burtapore villages in the neighbourhood, and who had the reputation of having successfully cut for the stone several times. The man came, and after having examined the boy, said he would undertake to perform the operation, if it was sanctioned by the authority there, and being assured that he might undertake the operation with perfect confidence, and that whatever might happen, no mischief should come to him, both the father

of the boy and the doctor went away pleased, and satisfied with the encouragement they had received, returning the next morning (12th October) and reporting that the operation had been performed successfully, and the boy relieved from the excruciating agony he had been in. The stone extracted was of the size of a small walnut, rough and jagged, it had the appearance of a coarse freestone, with little fissures somewhat discoloured. It was extracted by what you would call a lateral operation, with no other instrument than a razor, a lancet and a needle. The perineum was well rubbed with sweet oil, until it became quite soft and flexible, so that the stone was sensibly perceptible to the touch, and by pressure through the anus, was brought to the point most convenient for making the incision, but what seems most admirable in this man's mode of operating, is, that he contrived to fix the stone, so that when the incision was large enough it forced its way through the opening, without the pain of extracting by the forceps, &c. This is now the fourth day, and the boy is doing well, without any appearance of fever. In twenty days, they say, the wound will be healed up, when he will be perfectly well. The diet prescribed is very low and simple. The doctor's name is Nunook Roy, he lives at Kama in the Burtapore district, about 12 miles from Muttra, he is of the Kait cast. The father of the boy is Manuck Chund, of the Kiltera cast. So you will see the Hindoos have no objection to perform surgical operations, I admire much the firmness and decision of the father of the boy, in risking an operation of such delicacy and difficulty. The doctor, who is a little oldish man (about 50 years), was also quite confident of his abilities to perform the operation."

In 1818 there were no mafasal dispensaries, no hospitals except those for troops, European and native, nor had Civil Surgeons begun to attempt operative surgery. The operation appears to have been median, rather than lateral, the stone of the "mulberry" type, most likely composed of oxalates. There is a discrepancy in the dates given, October 12th, the day of, or the day after, the operation, October 13th, the date of the letter, and the statement "this is now the fourth day." One of the dates has probably been misprinted.

D G C

Correspondence

REMARKS ON ASCARIASIS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I am much indebted to Drs Ethel Landon, C F Schaffer and S V Savant for their notes on *Ascariasis* and their experience in regard to the existence of pyrexial phenomena in round worm infestation published in your issue of November 1910, and I would ask you to kindly permit me to express my views regarding the various points put forward by your correspondents in connection with the subject under reference.

1 One endorses what is stated by Dr Ethel Landon as to the necessity of Santonin and Castor oil in a large number of the native children attending hospitals. I have frequently observed the "strawberry" appearance of the tongue in which the dorsum is moderately coated and pale, while large bright, pink, papulae stand out in sharp contrast, and the tip is red and moist" in cases of Ascariasis, and one has arrived at the conclusion that this state of the tongue arises from chronic irritation of the alimentary tract due to many causes one of which is round worm infestation. A similar condition of the tongue may often be seen in adults affected with an ulcerated, swollen, and spongy state of gums which is widespread in this country especially during the summer months often associated with gastro-intestinal disturbances, including even symptoms simulating bacillary dysentery of a cutaneous type.

2 I have not specially observed the "pain in one or both knee joints sometimes combined with swelling" in children between 4 and 12 years of age noticed by Dr Schaffter. This symptom may be explained by the view that in some cases of ascariasis there is a toxin or toxins affecting focal areas as occurs in the toxæmia of other conditions, such as diphtheria. Its absence in some cases of chronic round worm infection might be accounted for by a previous immunisation against these toxins. It is interesting to record that a large number of the cases he sees are associated with pyrexial phenomena.

3 In reply to one of Dr Savant's inquiries I am not prepared to state that the numerous manifestations of ascariasis can be grouped together so as to form a clinical entity. The description of the symptoms given in his cases closely correspond with those one has met with frequently, and in my opinion indicates a condition of gastro-intestinal irritation with more or less toxæmia. In typical cases of this kind in native children I should have little hesitation in declaring round worms to be the cause of these symptoms and treat them accordingly. I feel quite sure that if santonin and castor oil were more generally used amongst natives, many of the cases of undefined fever now called "simple continued fever," "malaria" and "doubtful enteric" would be explained.

One is not prepared to deny the possibility of an intermediate host existing in the case of *Acaris lumbricoides*, but the natural history of this parasite would appear to negate the necessity for such a host. The shell of the egg when leaving the definitive host is thick indicating the necessity for resisting agencies, the enclosed yolk has undergone no developmental changes and all the developmental processes of the embryo are in course of time completed within the egg itself. If the eggs are kept in moist earth at proper temperature, and under the conditions in which they occur in nature they at the end of some months will be found to contain mature embryos, and it would be possible to infect some of the lower animals with such eggs. This character indicates that the egg has to go through a phase of development outside the body of man, just as we know is the case with *anystostomum deodarum*, in which also an intermediate host is unnecessary. The egg of the round worm differs altogether from that of the *Oryzias vermicularis* which is thin shelled, and even when discharged with the faeces already encloses its tadpole like embryo, which only requires to be set free by the solution of its envelope in the intestinal juices to begin developing to maturity.

One's personal experience does not coincide with that of Dr Savant as to the freedom of vegetarians from round worm infestation, although I must confess to not having made specific observations as to the relative numbers of cases met with in those who take animal food as compared with those whose diet is mainly vegetable. It is worth while working out this interesting problem, and the inquiry might include the other statement advanced by Dr Savant, that fish eaters are inordinately subject to round worm infestation.

P. H. HIR,
Lt Col, I.M.S.

LANSOWNE

ON THE TECHNIQUE OF HYPODERMIC INJECTION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I have read, with great interest, the article of Captain McKechnie in the June number of *I.M.G.* of last year, and am tempted to write a few lines on the subject, expressing my views on the subject. This is, however, no exact criticism on his article, but should be regarded as a supplement.

His critical survey of different kinds of syringes in use and the difficulties felt in using each one of them, and his suggestions for their improvement are masterly and laudable. He is very particular about asepsis, as is usual in these days, and has laid great stress on the point, and to obviate the difficulties in the way, he has described the procedure fully in his own way. But "there is many a slip between the cup

and the lip" as the saying goes, those of our brethren practising in the country will decide for themselves how far Captain McKechnie's method proves convenient and practicable to them. I should like to draw their attention to the following points—

(1) Carrying so many things as a spirit lamp, two tea-spoons, one pair of forceps and a hypodermic pocket case, containing the necessary apparatus and tubloid tubes.

(2) The use of oil—This is to obviate jamming of the plunger and to sterilise the syringe by using heated oil. To observe cleanliness with handling oily substances is a difficult problem to my mind.

(3) The use of teaspoons—Dipping the end of a steel needle in 1 c.c. of liquid in a teaspoon, without touching the spoon is a difficult matter, specially at night when injections are more frequently required to be given. Frequently touching the spoon with the end of a needle is sure to make it blunt and a blunt needle gives pain to the patient.

(4) Boiling the solution for injection—Captain McKechnie himself says morphia on boiling is partially converted into Apo Morphine and thereby causes vomiting but prescribes no remedy for it. In case of other things such as Tubloid Morphine Sulph., with atropine Sulph.—Tubloid, Hyoscine Co.—Tubloid, Strichnine Hydrochlor.—Tubloid, Trinitin, &c., which are frequently given subcutaneously and contains very minute quantity of the drugs, boiling does not affect them, I am not quite sure.

(5) Not putting the wire within the bore of the needle—Olive oil, however pure, in contact with steel, will form a reddish brown sticky substance which is not at all desirable within a hypodermic needle, of course, it is formed after a little time. It is my practical experience with other steel articles I for myself, don't find any difficulty in passing the wire through the needle. It is the most perfect and surest way of keeping the bore of the needle in nice good order. A straight and fresh piece of wire goes in easily and it should be thrown away as soon as it is kinked.

Now I should venture to describe what I myself do in giving hypodermic injections. But before doing that I must apologise to the profession for not observing the strictest aseptic method, the only reason being that it is almost impracticable in this place of Bengal where the poorest villages are my patients and I believe such is the case with other unfortunate brethren of mine, who are stationed like myself and well acquainted with the people's method of living and their surroundings. I have got to use an all glass syringe of Burroughs Wellcome & Co. with fine steel needles and also one of platinum, but as the latter being a little stouter, I generally use steel ones.

Like a country practitioner I carry in my bag with other things a separate minim measure and a clean piece of fine linen handkerchief specially for my hypodermic apparatus. I take out my syringe and fit all the pieces together, taking care to note that every thing is in good order, then I fill my minim glass with spt etheris sulph and immerse the whole of the needle in it to draw a quantity to fill the syringe barrel almost completely and then I eject out the liquid again, after a few seconds, into the minim glass, then I move the piston (or plunger) several times, up and down, within the barrel and by doing it almost all the residual ether is evaporated away. I then separate the needle catching hold of its base with the tips of my thumb and forefinger which by this time I have already dipped in ether and rubbed clean, I then draw in about 20 minims of clear drinking water from a clean glass and then remove the nozzle piece and draw up the piston a little more, and taking a tabloid between the tips of my thumb and forefinger I crush it without pulverising it completely and put the whole into the barrel containing water and replace the nozzle piece, all this time the syringe being held with its muzzle up, then after carefully pushing the piston in to expel the air bubble completely I put my left forefinger on the nozzle and by drawing the piston in and out several times and by shaking the syringe the tabloid is dissolved quickly and my syringe is kept ready for use, with the needle fitted up again. With the remaining ether in my glass I clean the site for injection by rubbing it with a clean bit of rag. As regards the selection of site I always prefer the back of the rim like Captain McKechnie. I hold the base of the needle, the nozzle piece and the syringe barrel all together with the help of my thumb and forefinger of right hand and push the piston with my palm while my left hand is engaged in catching the cutaneous fold. This I find more convenient instead of using the finger grip, a recently invented improvement on B. W. & Co.'s syringes.

To keep the needles and syringe clean I follow the method below. After the injection is given I at once separate the pieces of the syringe and immerse them all in clean water and wash and then rub them dry with the handkerchief kept for the purpose. The needle I blow out from the base with my mouth, after washing and put the wine into the bore and rub again with the handkerchief. But on reaching home I boil the syringe every time. I never use any oil to the needles, but always see that they are kept dry. Sometimes in a hurry if the syringe is not well dried the piston or the nozzle piece

may get jammed, and in that case putting the whole apparatus in water for some time the parts loosen quickly and if the needless get rusty (slight) of course) use of emery cloth and Goddard's Powder and soft cloth will remove it satisfactorily. By following the above method I have been able to give a little more than 2000 injections in the last 4 years I have been here and with only one syringe (B. W. & Co's) with two steel needles and a platinum one, which is used on two occasions I have never had any mishap what so ever, either to my patients or to my syringe.

PANCHTHUPIS
Dr MURSIDABAD } Yours, etc,
A GHOSH, L.M.S.,
Srimati Saraswati Charitable Dispny

AN UNUSUAL COMPLICATION IN LITHOTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

Sir Ram Hindu male child of 5 years, was admitted in Prince of Wales' Hospital for Vesical Calculus on the 11th June 1910 and after the usual preparation was put under chloroform for operation, on the following day. There being no small lithotrite to suit the child and the stone a fairly large one for his age, I performed lateral lithotomy and removed the stone without any difficulty. It was a Mulberry Calculus with very irregular surface, somewhat oval in shape and weighed 7 drams. There was no unusual bleeding. I could enter the bladder with one stroke of the knife and the wound was quite clean cut. The child was put back to bed after the wound was dressed, and the legs tied in the usual way and the case progressed quite smoothly. Fourteen days after the operation the wound healed completely and I discharged him cured on the 26th morning. The parents, however, for some private reason, stayed in hospital for a day. When I was going round the wards on the following morning I noticed that the little fellow was in great pain and had passed a lot of bloody urine in the bed. The bladder was enormously distended and felt very hard above the pubis. I may here remark, that two or three days before I discharged the boy, the mother had told me that the boy's stomach was very painful but I attributed this to indigestion brought on by some unsuitable diet as there was no apparent reason to suspect any other cause and gave him a carminative mixture. The condition of the bladder made me very anxious and appeared as if it was distended with blood and clots. How and where the haemorrhage took place I could not make out. The Civil Surgeon, Lt Col J K Close I.M.S., very kindly advised me to explore and wash out the bladder, and I made a median incision in the perineum just sufficient to introduce a large evacuating catheter and removed masses of dark coloured clots with the extractor just as is done in litholapaxy. I was much relieved to find the haemorrhage disappearing and the parts restored to normal size. I carefully searched in the clots the probable cause of hemorrhage but none was apparent. When washing out the bladder again on the following morning, I noticed a small bit of Urinary Calculus coming out with the washings. It was a tiny little bit about the size of a wheat grain with tapering points and oxalic acid composition. It had evidently worked its way out from the kidney which explains the obscure pain noticed two or three days before the discharge and subsequent hemorrhage into the bladder. The boy got on all right subsequently and was allowed to go home after a further stay of about a fortnight in hospital.

My excuse for sending up the case is that such complications are very rare.

Yours, etc,
B BANERJI, L.M.S.,
CIVIL ASST SURGEON,
Prince of Wales' Hospital, Benares

BUGS IN RAILWAY CARRIAGES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Having been much troubled by bugs at night in 1st class railway carriages on more than one occasion recently, I should like to ask readers of the Indian Medical Gazette for suggestions on certain points.

Railway Companies confess to great difficulty in dealing with the bug problem in 1st class carriages, and as far as my information goes their methods of cleaning the carriages are characterised neither by efficiency nor with a definite purpose. Supplying carriage cleaners with Keating's powder to scatter about, as is done by one company, is a waste of money. Trains reaching Germany from Russia are infested with bugs to an extent that the cleanly Teuton cannot endure and finding ordinary cleaning methods ineffectual, in Berlin they run whole carriages into a huge chamber which can be sealed up, exhaust the air and pump in gaseous disinfectants.

Disinfection on such a scale is probably beyond the resources of Indian railways but it seems reasonable to suppose that something on a smaller scale might be practicable and effectual.

Plague, it has been proved can be carried by bugs, and possibly Kala-azar and even other bacterial and parasitic diseases can also be conveyed by them. A bug infested carriage, if its inhabitants become hosts may thus be the means of infecting numerous unlucky travellers, so it is clear that the matter is one of some importance from the standpoint of public health as well as that of mere discomfort.

The points on which I solicit information from those of your readers who have either experience or ideas are—

(1) What disinfectants or chemicals are particularly imminent to bugs?

(2) How can they be employed so as to reach the bugs in the crevices of the wood work and cushions into which they retreat and where they breed?

(3) Is any curicidal substance forthcoming (a) traces of which remaining in the carriage are innocuous to human beings, (b) which does not injure the wood work, varnish, cushions or other fittings?

(4) Can an inexpensive and effectual method of dealing with the problem be devised which is at the same time so simple that it can be applied by the untrained carriage cleaner with success, and would therefore, be one which it might be possible to induce railway companies to adopt?

Yours etc,
J E CORNWALL,
MAJOR, I.M.S.

COONOR

[Will some of our readers reply?—ED., I.M.G.]

THERAPEUTIC NOTICES

U P EXHIBITION, ALLAHABAD

HIGIENI COURT

BURROUGHS WELLCOME & CO, London (New York, Montreal, Sydney, Cape Town, Milan, Shanghai, Buenos Ayres) This Firm have one of the most up to date Exhibits in the Court, and of great importance to the Medical Profession.

Tabloid Medical Equipments of every kind are shown including Pocket Hand and Saddlecases Cycle Carriage and Motor cases First Aid for Automobilists, Aviators Aeromarines, Yachtsmen, Sportsmen, etc. The small cases for Boy Scouts and Nurses are very neat.

TABLOID Hypodermic Ophthalmic, Urine Testing, Water Analysis, and Bacteriological cases.

All Glass Serum and Hypodermic syringes appeal strongly to the profession.

Wellcome Brand Serums, Vaccines and Tuberculins a handsome walnut screen, with Micro photos, culture tubes and the finished products, is very attractive.

The Tabloid Quinine Hydrochloride Tincture, packed in parcels for post is now being tried by the Government of N. Bengal and Assam, together with the Tannins of Quinine treatments for children, proved very interesting.

Wellcome Brand Chemicals and Galenicals, especially those Physiologically standardised, the Comprised Quinine, and the Bismuth Barometer were specially noted.

The Exhibit also included, Vapoole products, Solid Culture Media, a fine display of Tabloid Quinine, and all the well known lines manufactured by the Firm, as Kepler, Hazeline, Vine Wine etc.

More than 220 highest awards have been conferred upon the Firm at the great Exhibitions of the world. We heartily congratulate them on their Exhibit.

The Exhibit supplied by the X RAY INSTITUTE, Dehra Dun is very up to date and ably illustrated by Dr Butcher, the Superintendent of the Court.

In connection with the Exhibits illustrating common Indian diseases apparatus specimens etc have been kindly loaned by the Bombay Bacteriological Laboratory Central Research Institute, Kisauli, Pasteur Institute, Kasauli, Agricultural Research Institute, Pusa, Medical College, Calcutta and others, which formed a very interesting and instructive Exhibit.

MESSRS DOWN BROTHERS, Ltd, of 21-23, St Thomas' St, London, have taken up a large space and have fitted their Stall with a most excellent exhibit, in the form of a complete Operating Therapeutic Sterilising room, Anesthetic room and ward.

The most up to date aseptic furniture and surgical instruments are on show and should be of great interest to medical men who have to install their hospitals or consulting rooms with the latest fittings.

The Operating table is the centre of interest and is fitted with every modern convenience.

C BALFR, 244 HIGH HOLBORN have a very fine display of Microscopes including Neurist's Electric and Dissecting Hemometer case, Slides and Tropical cases.

The CARLSBAD Authorities are exhibiting photographs of their establishment and all the products of their noted spring.

LAWRENCE AND MAYO, Calcutta, have an interesting exhibit, including a set of 120 artificial eyes, each depicting various forms of eye disease.

Plans and Photos of the NEW MEDICAL COLLEGE, Lucknow, are shown.

ST JOHN AMBULANCE ASSOCIATION are exhibiting apparatus used in rendering First aid to the injured.

The DISTRICT JAIL OF ALIGARH is exhibiting a tablet machine, capable of turning out 100 per minute.

The SANITARY COMMISSIONER to the Govt., U P, has arranged the following exhibits—

Calf lymph, working exhibit Malaria Exhibit, including the fish known as 'millions' which have been imported from the Barbadoes, purification of water & sanitary models, form a very instructive exhibit.

MUNSON PLANTATION have a fine series of photos &c Quinine showing Cinchona nursery, collecting bark, removing bark, etc., also specimens of bark.

Specimens of the various salts of Quinine are shown by Burroughs Wellcome & Co., Howard & Sons, Ferris, & Zumerman.

SMITH STANISTREET & Co., Calcutta, have a number of interesting lines on view, including X-ray outfits, Auto Spiro's Way's Pocket Smelters, and 2 or 3 specimens of aseptic hospital furniture.

JYE'S SANITARY COMPOUND, Ltd., are showing their well known disinfectant Cyllin, together with various Cyllin specialities.

RICHARDSON & CRUDDAS, Bombay, have a very up-to-date exhibit, showing 1 Model bathroom 2 Hospital & operation room specialities 3 Modern Sanitary fittings, this stand has been very much admired.

PEARSON'S ANTISEPTIC COMP. show their Hycol, with which the whole Exhibition & Camps have been disinfected by them, free of charge.

The Section of INDIGENOUS DRUGS, arranged by Major B D Basu, I M S, contains medicinal products from different parts of India, largely of vegetable origin.

Dow Bros, Ltd., of St Thomas's Street, London, have been awarded the Grand Prix (highest award) for surgical instruments and aseptic hospital furniture at the Buenos Ayres Exhibition 1910, as well as the Grand Prix (highest award) at the Brussels Exhibition, 1910.

THE TREATMENT OF SURRA

The researches made by Maj Holmes (the Imperial Bacteriologist at Maktesar) into the causes and means of prevention of Surra—hitherto considered incurable—appear to have been crowned with success. In a recent issue of the "Journal of Parasitology" (Vol III, No 1, Apr 30, 1910) he gives the results of a large number of experiments which prove that Arsenic given in large doses and at regular intervals, is a cure for Surra in horses and mules. It should not however, be given either in powder or solution, as the irritant action of this drug on the mucous membrane of the stomach in many cases produces gastritis and death. He suggests that it should be given in the form of balls with a coating which is insoluble in the gastric juice, yet soluble in the intestines, so that the drug is absorbed in the bowels, and MESSRS JEVES, LTD., of London, at his suggestion have prepared a series of these balls in three strengths suitable for ponies or cobs, light and heavy horses. Details of these may be found in our advt columns.

The attention of our readers are directed to the useful pamphlet published by Jeyes Sanitary Compounds Co. on Infection and Disinfection, written by Mr J T Ainslie Walker, F C S. It gives a vast amount of information on disinfection and on the need for standardising disinfectant and shows to what a degree the Jeyes Company's articles comply with this admitted need.

Packer's Tar Soap is now so well known as to need little recommendation from us. Some specimens recently received have been found very satisfactory. They are refreshing and form a good lather in all waters. They are especially recommended for use as soaps for the hair and scalp.

To all interested in photography we can strongly recommend the WELLCOME PHOTOGRAPHIC EXPOSURE RECORD AND DIARY. It is a mine of information on photography in small compass, neatly bound with pencil for carrying about in the pocket. Its cost is only 1s.

The attention of all readers interested is directed to the descriptions of Heirson's patent ANHYDROUS ELECTRIC INCUBATORS. They heat up quickly and the temperature

is easily regulated. The prices vary from £ 4 16s 6d to 16 guineas according to size.

Our attention has been drawn to the very favourable notices given to some preparation of the well known firm of KNOLL AND CO., especially to their preparations DIDRETIN and DIGIPURUTUM which are very well reported on for use in cases of cardiac diaphysis and dyspnoea. The same firm's SANTYL (Knoll) is very well spoken of in the treatment of gonorrhœa. Dr Biemner, of Moscow, has found it of special value. It is tasteless and free from other disagreeable effects.

His Majesty the King has been pleased to appoint Messrs Smith Stanistreet & Co., the well known Chemists of Calcutta, "Chemists to H M the King". We congratulate this well known firm, who celebrate their centenary this year, on the well-deserved honour.

Service Notes

THE HONOURS LIST

THE medical services are not conspicuous in the New Year's Honours List, but nevertheless we welcome a new departure. The grant of the Kaiser-i-Hind Medal to Lieutenant Colonel Henry Smith, I M S, of Amritsar, is not in itself an adequate recognition of the remarkable work done in eye surgery by this officer, but taken with his recent appointment as one of the Honorary Surgeons to the Viceroy it will be regarded by all as a satisfactory recognition of the good work done by Henry Smith of Amritsar. Major Irvine, I M S, a well known medical officer in the Foreign Department also received this medal. The new departure, however, is more interesting. For too long it has been considered that the grant of Brevet promotion could only be given for active service in the field, but that this is not so, was already clear from the brevet rank given to Lieutenant Colonels Leishman and Sir David Bruce of the R A M Corps, and a new line has been now established by the Brevet promotion of Colonel W B Brunner, I M S, for many years the distinguished head of the great laboratory at Patel, Bombay, and of Lieutenant Colonel Cleveland, I M S, the Secretary to the P M O, His Majesty's Forces in India and of Major S R Christopher, I M S, the well known expert on Malaria.

These are admirable and thoroughly deserved promotions. The good work done in the Kasauli Central Research Institute by Lieutenant Colonel Semple, R A M C (retd.) is fitly recognised by the grant of a Knighthood.

Recently just before his retirement Lieutenant Colonel Shearer, C B, I M S, also received a Brevet step to Colonel

We deeply regret to record the sudden death from cholera in Calcutta, of Colonel J A Cunningham, I M S, the recently appointed Inspector General of Civil Hospitals, C P. Colonel Cunningham was a very well known Civil Surgeon in the Punjab, where he had held all the most important posts e.g., Delhi, Mooltan, Simla and Lahore. He was a brilliant Surgeon, especially great at litholapaxy. He was a keen sportsman and his horses were well known at many a race meet.

BRIGADE SURGEON RINFIS MANTELL, Bengal Medical Service, retired, died at Hastings on November 1910. He was born on 15th February 1833. Educated at the London Hospital, he took the M R C S and M B, London, in 1855, and the S A in 1856, and entered the I M S as Assistant Surgeon on 10th February 1859. He became Surgeon on 10th February 1871. Surgeon Major on 1st July 1873 and retired, with a step of honorary rank, on 16th July 1881. The Army Lists assign him no war service.

COLONEL PATRICK ALFRED WEIR, of the Bengal Medical Service, retired on 26th October 1910. He was born on 10th June 1851, educated at Aberdeen University, where he took the degrees of M A in 1872, and of M B, C M, in 1874, all with Honours, and at Guy's Hospital, and entered the I M S, passing first, on 30th September 1875. He became Surgeon Major on 30th September 1887. Surgeon Lt Colonel on 30th September 1895, was placed on the selected list on 21st September 1901, and promoted to Colonel on 26th October 1905. He served for many years as Factory Superintendent at Ghazipur, in the Opium Department, and subsequently under the Foreign Office, as Residency Surgeon at Katmandu in Nepal, and afterwards in Rajputana and Central India. On promotion he became Administrative Medical Officer of the Central Provinces, a post he has held for the past five years. He served in the Afghan war of 1879-80, receiving the medal. He was joint author, along with Lt Colonel J Crofts, of "A Medico topographical Account of Kota and Jhalawar," Calcutta, 1900.

LIEUT COLONEL EDWIN FRANCIS HORATIO DOBSON, of the Bengal Medical Service, retired on 26th November 1910, having been granted an extension of over two years to enable him to complete thirty years' pension service. He was born on 21st September 1853, educated at Aberdeen University where he took the degrees of M.B.C.M. in 1878 and at Middlesex Hospital, and entered the I.M.S. as Surgeon on 2nd October 1880. He became Surgeon Major on 2nd October 1892, Lt Colonel on 2nd October 1900, and was placed on the selected list on 21st November 1905. In the early part of his service he served for many years as Civil Surgeon of Dhubri, in Assam, where he did a great deal of work in connection with the emigration of coolies to the Assam tea gardens, and in 1899 acted for a time as Protector of Emigrants in Calcutta. For the last ten years he had been in the Medical Stores Department at Calcutta, up to 1910, and for the last few months at Mian Mir. The Army Lists assign him no war service.

LIEUT COLONEL JOHNSTON SHARFR, C.B., D.S.O., of the Bengal Medical Service, retired on 5th December 1910, having been granted an extension of over three years, to enable him to complete thirty years' pension service. He was born on 22nd October 1852, educated at Aberdeen University, where he took the degrees of M.A. in 1873, M.B., C.M. in 1877, all with honours and also the D.P.H. in 1897, and entered the I.M.S. as Surgeon on 2nd October 1880. He became Surgeon Major on 2nd October 1892, Lt Colonel on 2nd October 1900, and was placed on the selected list on 14th July 1906. His whole service has been spent on Military employ, and he has a long record of war service, including—Egypt, 1882. Medal and bronze star, Burma, 1887-88; operations of the first and third Brigades, Southern Shan Column, Medal with two clasps, North West Frontier of India, Hazara 1891, clasp ditto second Muliangui expedition, 1891, clasp, ditto, Waziristan 1894-95 mentioned in despatches, G.G.O. No. 473 of 1895, clasp, and Tukah 1897-98 mentioned in despatches, London Gazette, 5th April 1898, medal with two clasps, and D.S.O. He received the C.B. on 25th June 1908. For some time past he had filled the appointment of P.M.O. of the Derajat and Bannu Brigades. We are glad to see that Lt Colonel Shearer has been given a Brevet Colonely on his retirement.

LIEUT COLONEL HASTINGS NORMAN VICTOR HARRINGTON of the Madras Medical Service, retired on 27th November 1910, having been granted an extension of nearly a year to enable him to complete thirty years' pension service. He was born on 12th January 1855, educated at Aberdeen University and at the Royal College of Surgeons Edinburgh school, took the diplomas of L.R.C.P., Ed. and L.R.C.S., Ed., in 1879, and entered the I.M.S. on 2nd October 1880. He became Surgeon Major on 2nd October 1892, Lt Colonel on 2nd October 1900 and was placed on the selected list on 1st April 1909. Most of his service has been spent under the Foreign Office, and latterly he held the appointment of Residency Surgeon and Chief Medical Officer in Rajputana. The Army Lists assign him no war service.

LIEUT COLONEL JOHN ADOLPHUS BURTON, of the Madras Medical Service, retired on 5th December 1910, having been granted an extension of one year to enable him to complete thirty years' pension service. He was born on 10th December 1854, took the diplomas of L.R.C.P., Ed. and L.R.C.S., Ed., in 1879, and entered the I.M.S. on 2nd October 1880, becoming Surgeon Major on 2nd October 1892, Lt Colonel on 2nd October 1900, and being placed on the selected list on 22nd June 1909. His whole service had been spent in military employ. He served in China in 1900, receiving the medal.

COLONEL WILLIAM PLEACE WARBURTON, Bengal Medical Service, retired, has resigned, from the end of the year 1910, the appointment of Superintendent of the Edinburgh Royal Infirmary, which he has held for the past eleven years. He was educated at Edinburgh University where he took the degrees of M.B., C.M., in 1865, and M.D. in 1885, and entered the I.M.S. as Assistant Surgeon on 31st March 1866, at the age of 22. He became Surgeon on 1st July 1873, Surgeon Major on 31st March 1878, Brigade Surgeon on 1st April 1891, and Surgeon Colonel on 9th January 1894, retiring on 9th January 1899. He served for many years as Medical Adviser to the Raja of Kaputhal, and after his promotion, successively, as P.M.O. in Assam and as I.G.C.H. in the North West, now the United Provinces, and received the C.S.I. on 1st January 1890.

For nearly half a century past the appointment of Superintendent of the Edinburgh Royal Infirmary, which carries with it a good official residence, as well as a fair salary, has been held by retired officers of the medical services. Deputy Surgeon General Fasson, of the A.M.D., held it for many years before his death in 1893, when he was succeeded by the late Surgeon General Lithgow also of the A.M.D. After Dr Fasson's death Brigade Surgeons Kenneth McLeod and

H.B. Purvis were among the candidates for the appointment selected to form what is called in Scotland the "Short leet," i.e., a few chosen from among many candidates, from whom the final selection is made. Colonel Warburton succeeded Surgeon General Lithgow in December 1899. It seems probable that the next selection will not be made from retired service officers but will be some one more in touch with the most recent developments of modern surgery than such officers can be expected to be.

LIEUTENANT COLONEL D.T. LANE, I.M.S., acted as Professor of Forensic Medicine, Lahore Medical College, vice Lieutenant Colonel H. Hendley deputed to P.M.O.'s Office, Rawal Pindi.

CAPTAIN S.B. METHA, I.M.S., is appointed District Plague Medical Officer, Lyallpur.

WITH reference to the notification of the Government of India, in the Home Department, No. 2143, dated the 18th of November 1910, Major S. Browning Smith, I.M.S., officiating Sanitary Commissioner, Eastern Bengal and Assam, assumed charge of his duties as Chief Plague Medical Officer, Punjab, on the forenoon of the 16th November 1910, relieving Captain C.A. Gill, I.M.S., transferred.

MAJOR C. DONOVAN, I.M.S., Physician, General Hospital, Madras, was granted 3 months' privilege leave in December.

MAJOR E.M. ILLINGTON, I.M.S., is due out from furlough on 14th February 1911.

MAJOR H. KIRKPATRICK, I.M.S., retired from leave on 15th December 1910.

CAPTAIN V.B. GREEN ARMYTAGF, Indian Medical Service, is on return from leave out of India, re-appointed specialist in Midwifery and Diseases of Women and Children, Burma Division, with effect from 9th October 1910.

THE undermentioned officers have been permitted by the Right Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the dates specified—

Lieutenant-Colonel John Adolphus Burton, Indian Medical Service, Madras, 6th December 1910.

Lieutenant Colonel Robert Evans Stuart Davis, M.B., Indian Medical Service, Madras, 29th October 1910.

Major Thomas Alfred Ollivant Lungston, Indian Medical Service, Bengal, 12th December 1910.

THE services of Captain W.S.J. Shaw, M.B., I.M.S., are placed permanently at the disposal of the Government of Burma.

THE services of Lieutenant Colonel D. St J. D. Grant, M.B., I.M.S., are replaced at the disposal of His Excellency the Commander-in-Chief in India, with effect from the 17th December 1910.

IN supersession of this Department's Notification No 7543G, dated the 21st November 1910, the services of Captain A.W. Overbeck Wight, M.B., I.M.S., are placed at the disposal of the Government of the United Provinces, with effect from the date on which he is relieved by Major E.R. Pally, M.B., I.M.S.

THE services of Captain R.A. Chambers, M.B., I.M.S., are replaced at the disposal of His Excellency the Commander-in-Chief.

MAJOR J. FISHER, D.S.O., Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, is posted, on return from leave, as Residency Surgeon, Jaipur, with effect from the 26th November 1910.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major T. Jackson, M.B., B.Ch., I.M.S., on return from leave, to act as Civil Surgeon, Karachi, during the absence on deputation of Lieutenant Colonel B.B. Grayfood, M.D., I.M.S., or pending further orders.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Captain A. Murphy, M.B., I.M.S., to act as Civil Surgeon, Ahmednagar, in addition to his own duties, vice Captain C.J. Copinger, M.B., I.M.S., transferred, pending further orders.

CAPTAIN N.S. SODHI, I.M.S., is posted to Gurgaon as Plague Medical Officer.

CAPTAIN W W JUDWINE, I M S, officiating Civil Surgeon, Rawal Pindi, has been declared to have passed the prescribed test in the compulsory colloquial examination in the Punjabi language for medical officers posted to the Punjab for civil employ as Civil Surgeons, held at Lahore on the 12th of November 1910.

LIEUTENANT C G HOWITT, I M S, was appointed to hold Civil Medical charge of Buxar Durra, from 5th December, in addition to his military duties.

On his return from privilege leave Captain W W Jendwine, I M S, is deputed to the Mayo Hospital, Lahore, for training.

CAPTAIN CHILFORD A GILL, I M S, was appointed Assistant Plague Medical Officer, Lahore and since then has been appointed Deputy Sanitary Commissioner (*sub nomine*) vice Major L L Parry, I M S, whose services have been placed with the Home Department.

CAPTAIN C A SPRAWSON, I M S, Civil Surgeon, 2nd class, was on study leave for seventy two days from the 11th August 1910.

LIEUTENANT COLONEL J CHAYFOR WHITE, I M S, Sanitary Commissioner of the United Provinces has been granted, by His Majesty's Secretary of State for India, extension of leave for six months on medical certificate.

MILITARY ASSISTANT SURGEON O G THOMISON, Civil Surgeon, Galiyal, obtained privilege leave for one month from 5th February 1911.

CAPTAIN M FOSTER RIANFY, M B, D T H, is transferred to act as Civil Surgeon, Nagpur.

The services of Captain W S McGillivray, I M S, are replaced at the disposal of the Government of India.

MAJOR J L MACRAE, M B, I M S, Civil Surgeon of Coorg, is granted privilege leave for three months with furlough for two months in continuation, with effect from the 1st February 1911 or the subsequent date on which he avails himself of the leave.

CAPTAIN W R J STROGIL, I M S, is appointed to officiate as Civil Surgeon of Coorg during the absence on leave of Major J L Macrae, M I, I M S, or until further orders.

LIEUTENANT A C MONRO, I M S, is appointed specialist in Ophthalmology in the 7th Meant Division, and Lieutenant B Gale, I M S, as specialist in Electrical Science in the 1st (Peshawar) Division.

The Viceroy and Governor General has been pleased to make the following appointments on His Excellency's personal staff, with effect from the 23rd November 1910 —

To be Honorary Surgeons

The Honourable Surgeon General P H Benson, M D, I M S, Surgeon General with the Government of Madras.

Surgeon General A T Sloggett, C B (M G), British Service, Principal Medical Officer, 6th (Poona) Division.

Colonel R H Forman, M B, British Service, Principal Medical Officer, 7th (Meant) Division.

Colonel O F Willis, M D, I M S, Officiating Deputy Principal Medical Officer, His Majesty's Forces in India.

Colonel G F A Harris, M D, I R C I, I M S, Inspector General of Civil Hospitals, Bengal.

Lieutenant Colonel B M Skinner, M V O, R A M C.

Lieutenant Colonel H N Thompson, M B, D S O, R A M C.

Lieutenant Colonel R S B Henderson, M B, R A M C.

Lieutenant Colonel H Smith, M D, I M S.

Major B G Seton, I M S.

Major W Selby, D S O, I R C S, I M S.

We congratulate Lieutenant Colonel Smith, of Jullundur and Amritsar fame and Major Bruce Seton, the courteous and obliging Secretary to the D G, I M S on their appointments—which are new, the others having been appointed previously.

The services of Major W D Hayward, M B, I M S, are placed permanently at the disposal of the Army Department, with effect from the 27th November 1910, as Medical Store keeper to Government, Calcutta.

LIEUTENANT COLONEL D SEMPIRE, M D, R A M C (retired), Director of the Central Research Institute, Kasauli, is granted privilege leave for 3 months, with effect from the 8th December 1910.

CAPTAIN E D W GRIGG, M B, I M S, Assistant to the Director, Central Research Institute, Kasauli, is appointed to officiate as Director of the Institute during the absence on leave of Lieutenant Colonel D Semple, M D, R A M C (retired), or until further orders.

With reference to this department Notification Nos 316 and 318 dated the 2nd November 1910, Lieutenant Colonel F J Dewes, I M S, prior to proceeding on leave is posted as a temporary measure to the Civil Surgeoncy at Maymyo, pending the arrival of Lieutenant Colonel A O Evans, I M S, from leave.

The services of Lieutenant Colonel R B Roe, M R C S, I S A, I M S, Civil Surgeon and Superintendent, Lunatic Asylum, Nagpur are placed at the disposal of the Government of India, Army Department, with effect from the date on which he may be relieved of his duties.

CAPTAIN A K LAUDOR, I M S, made over charge of the duties of the Superintendent, Deor Ghazi Khan District Jail, to Captain D H F Cowin, I M S, on the afternoon of the 15th November 1910.

CAPTAIN W W JUDWINE, I M S, made over charge of the duties of Superintendent of the Shahpur District Jail to Lal Shabu Mai, Extra Assistant Commissioner, on the forenoon of the 23rd August 1910.

LATA SHABU MAI, Extra Assistant Commissioner, made over charge of the duties of Superintendent of the Shahpur District Jail to Captain W W Jendwine, I M S, on the forenoon of the 3rd September 1910.

MAJOR J L MACRAE, M B, I M S, is confirmed in the appointment of Civil Surgeon of Coorg, with effect from the 5th April 1910.

LIEUTENANT COLONEL H B McLAUGHLIN, M B, I M S, is confirmed in the appointment of Civil Surgeon, Simla (East), with effect from the 23rd November 1910.

MAJOR C DURB M B, I R C S, I M S, is confirmed in the appointment of Civil Surgeon, Simla (West), with effect from the 23rd November 1910.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

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BOOKS REPORTS, &c., RECEIVED —

Bengal Police Administration Report
Extra Plague No (Nov 10) of *Journal of Hygiene*
D Watson's Food and Feeding, 10s sd Oliver and Boyd
Schoppe's Die Krankheit der Warzen Hinder, T Ischer
Hygienic Bulletin Marine Service, U S A Nov 66, 67 & 68
J T Mac's Problem of Race Betterment Philadelphia, W T Doman
An Indian Medical Dictionary Delhi Press 1910
W M Stevens' Medical Diagnosis H K Lewis Price 2/-
Glaske's Text book of Public Health, 2nd Ed 1s 1d T & S Livingstone
Major Anderson's Flints to Dressers Thacker, Spink & Co

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM —

Major N B Inglis, I M S Madras Major Foulkes, I M S, Waltair Lt Col P Hohls, I M S, Lansdowne Major S P James, I M S, Simla
Colonel J Granger, I M S, Maymyo Capt Greig, I M S, Kasauli
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Original Articles.

CIRRHOSIS OF THE LIVER *

By J. T. CALVERT, M.B., M.R.C.P.,

LIEUT COLONEL, I.M.S.,

Physician, Medical College Hospital, Calcutta

My object in reading these fragmentary notes is to raise a discussion and elicit information on the points touched upon.

Serving in Bengal for many years past the marked prevalence of gallstones was early brought to my notice. The immediate effects of their presence in the production of biliary colic has long been familiar to me, whilst death from syncope or collapse has in my experience been by no means rare. On taking up my present appointment at the Medical College, therefore, I was not surprised to see their remote effect in carcinoma of the gall-bladder and liver. Recently there were no fewer than four cases of carcinoma of the liver in my wards at the same time. What I was not prepared for was, however, the large number of admissions for chronic interstitial hepatitis—the so-called alcoholic cirrhosis or hob-nail liver which I had hitherto believed to be a rather rare affection amongst the natives of the Bengal Province. Curiously enough, when writing these notes, Dr Wanless of the Mission Hospital, Mymensingh, published a paper in the *Indian Medical Gazette* for October 1910, in which he states "The most conspicuous feature of the medical side of the hospital work has been the considerable number of cases of cirrhosis of the liver—42—treated in the wards." He then makes further remarks about them to which you can refer.

During the last 14 months, i.e., from August 1909 to the end of September 1910 there were 23 admissions in my wards for this disease with 7 deaths. To what is the frequency of the diseases among Bengalis to be attributed? In my student days these cases would have been pointed out as horrible examples of the evils of drink, especially of drinking spirits. It is a curious fact in this connection that the deaths reported from cirrhosis of the liver are twice as great in beer-drinking-England, as they are in whiskey-drinking-Scotland. Is it possible that in that land of ultimate respectability in such cases the true cause of death is not related? But while a large number of persons take more alcohol than is good for them and many drink to excess, few get cirrhosis. With increasing knowledge, however, we know that it is possible to get cirrhosis without alcohol. Note the occurrence of this disease in animals. In recent years in children cirrhotic changes have

been found in the liver after the exanthemata, and had they lived the process of formation of fibrous tissue once started might have gone on sufficiently to produce a typical hob-nailed liver. Apart from the exanthemata, there appears to be a belief that cirrhosis in children may result from chronic irritation of toxic substances absorbed from the alimentary canal in faulty feeding. It may be concluded then that although alcohol alone will not produce cirrhosis, it may so impair the functions of the liver as to render it incapable of efficiently dealing with the bacterial products brought before it. We are all familiar with the part alcohol plays in that acute inflammation of the liver, viz., tropical abscess. But if alcohol produces this vulnerability of the liver to attack, may not other substances do the same, e.g., the absorption of ptomaines or other animal alkaloids from the alimentary canal? May not the presence of gallstones also by setting up irritation and catarrh in the ducts predispose to a chronic inflammation of the atrophic interstitial type as well as that of biliary cirrhosis resembling Hanot's disease? On examining the previous histories of these cases, it was found, as regards alcohol, that 7 took it to excess, 6 imbibed occasionally, whilst in 10 no history of taking alcohol in any form was obtainable. In searching these histories for other possible causes in 11 a history of malaria was shown. This, I think, may safely be neglected, since every one in Bengal at some time or other suffer from malaria and usually from more than one attack. Next in order of frequency comes dysentery with 9 cases, syphilis with 3, cholera 2 and pneumonia 2. Now, of these the most important in numbers, and also I think as being a possible cause, is dysentery. It requires a pretty good attack of dysentery to fix the resemblance of it on the memories of the class of patients who are admitted to this hospital, and it may be assumed that it was of such severity, therefore, as to lay the sufferer up and prevent him from following his usual occupation. Now 9 cases of dysentery among 23 patients admitted for another disease is a fairly high percentage and some of the patients had more than one attack. Add to this circumstance the fact that, as I have noted elsewhere, many people suffer from chronic dysentery of the caecum and ascending colon without being aware of the fact, believing their trouble to be diarrhoea only, it seems to be at least significant. Of the 9 dysenteric patients, 3 had taken alcohol to excess 2 occasionally, whilst 4 denied any alcoholic history. The difficulty of obtaining post-mortem examinations in this country is a serious drawback to any rapid advance in our knowledge, a handicap we alone can fully appreciate and which never seems to be realised by our confrères elsewhere more fortunately circumstanced. Of the three cases in which such

* Read before the Medical Section of the Asiatic Society of Bengal

examination was made, in one, in addition to the cirrhosis of the liver, dysenteric ulcers were found in the colon. In a second tubercle of the lung was found besides the cirrhosis, whilst in the third the condition was one of cirrhosis only. In all the kidneys were healthy.

As regards the symptoms, I would like your opinion on the significance of ascites and the prognosis after tapping. Hale White and the Guy's school take an exceedingly gloomy view of the condition, stating "that the average duration of life after enlargement of the abdomen has been noticed is but 8 weeks, and that but rarely does a patient survive the first tapping long enough to need a second." I remember seeing when a student at St Thomas's a case of cirrhosis of the liver in Dr Bristow's ward in which the patient, after a long illness and many tappings, was relieved and went back to work. Similar cases have occurred amongst the cases under review. Knowing the habits of the people, it will not surprise you when I state that all had ascites on admission. Of these 3 died before tapping was thought necessary, of the remainder 14 were tapped, and of them 4 died and 10 were relieved whilst several were both repeatedly tapped and subsequently operated upon and recovered. Seven were tapped once, 3 twice and 5 many times. The last case was particularly interesting. He was an educated Brahmin, drank to excess, had all the symptoms of cirrhosis of the liver, was tapped 4 times, had auto-inoculation and finally went back to work, the fluid which was still present in small amount having ceased to increase. Another case a Mahomedan who drank excessively, has been coming periodically to be tapped for more than 2 years past. He has been tapped altogether 20 times. He left after being relieved of 18 pints of fluid. In some of these cases it will be said that an error of diagnosis has been made. I admit its possibility, still all of those who went out relieved after tapping could not have been cases of mistaken diagnosis. Hence I do not take such an absolutely gloomy view of this condition as the Guy's school, serious as it undoubtedly is.

Another point of interest on which I seek enlightenment is what is the cause of the cholæmia or toxæmia, of which these patients die so suddenly and often so unexpectedly? How is it produced? Can we guard against it? Does it ever occur without the presence of ascites? (As before noted, all my cases had ascites.) If not, has the presence of ascitic fluid, interfering as it does with the renal circulation and urinary secretion, anything to do with it?

Treatment—The only point in the treatment that I shall refer to is the management of cases of ascites. I believe the ascites in cirrhosis to be largely due to portal pressure and only partially to toxæmia. If not, why is it that when a

collateral circulation is established, either naturally in the course of the disease or artificially by operation, real and undoubted improvement in the patient's condition occurs. If the ascites is due to toxæmia merely or to a chronic peritonitis, how is the improvement to be accounted for?

I believe that every endeavour should be made to rid the patient of his ascites. For this purpose at various times we employed all the diuretics at our disposal, including apocynum which in many cases of cardiac dropsy acts so well and promptly as to almost deserve its nickname of the vegetable trocæ. Although the amount of urine was increased, in no case was the ascites very greatly diminished.

Auto-Seropathy was tried in four cases. In one case no improvement resulted and the patient subsequently died of cholæmia. In the other three cases a marked increase in the secretion of urine took place, reaching its highest point on the third day. Thus, in the second case the amount of urine rose from 16 to 70 oz., in the third from 22 oz. to 80 oz., and in the fourth from 20 to 65 oz. The increase was not however, maintained, and the auto-inoculation had to be repeated every seventh day. The quantity injected was gradually increased each week from 1 dr to 1½ oz. The second case was operated on (omentopexy), subsequently tapped and is now said to be cured. The third case was discharged relieved and went back to his work with some fluid in his abdomen. The fourth case was tapped 4 times, and later auto-inoculated weekly, after which the ascites diminished and he returned to work.

Operation—Two cases in which there were no complications who had been tapped the one 4 times, the other twice, were operated upon by Major Stevens. Both recovered from the operation which consisted in fixing a large piece of omentum between the layers of the abdominal wall. The first case has been subsequently tapped 3 times and is now cured. The second case was tapped 3 times and subsequently left hospital and has been lost sight of. However useful this operation may be, it has the serious drawback of leaving a large ventral hernia.

EXPLORATORY LAPAROTOMY IN AFFECTIONS OF THE GALL, BLADDER AND BILE DUCTS

By F A BARKER, M.B.

CAPTAIN, I.M.S.,

Port Blair

THE aim of this article is not to discuss laparotomy in a general way in connection with the gall-bladder and ducts, but to show in what particular types of cases such an operation is desirable.

The benefit to be derived from the exploratory operation must always be to the patient, and the physician or surgeon should refrain from advising such a proceeding merely to confirm his own opinion of the cause of the trouble. An exploratory laparotomy therefore, is advisable and valuable almost solely in those cases in which the cause of the trouble is doubtful or unknown. If the cause can be determined from the history and physical examination the benefits likely to accrue from operation are in most cases known beforehand, and the operation (should such take place) ceases to be "exploratory."

In many cases, the pathological condition within the abdomen can be diagnosed with a fair amount of certainty, and an experienced physician may often make a correct diagnosis as to the presence, or otherwise, of a stone in the biliary system, and its actual position therein, nevertheless, difficult cases are constantly occurring, while abnormal symptoms or complications may make any definite diagnosis an absolute impossibility.

A patient that came under my notice in 1905 will show how difficult some cases may prove—

Case I.—K M, a woman, aged 34, gave a 9 years' history of colicky pain in the right side. The pain used to spread over the whole abdomen, and ran down into the legs up to shoulders and even extend down the arms. It was accompanied by diarrhoea and vomiting, but bore no relation to food and was not wholly relieved by rest.

She was treated at a Cottage Hospital for Gastric Ulcer.

Later, she came for treatment to Guy's Hospital Out-patient Department and her condition was diagnosed by one of the consulting physicians as "Movable Right Kidney and General Enteroptosis." Medical treatment caused no improvement, on the contrary, the attacks grew more frequent, and gave rise to frequency of micturition and polyuria.

In March 1905, she was admitted for "? Movable Kidney and Hydronephrosis," and it was decided to make a thorough examination under an anaesthetic, and if necessary, operate.

When the abdominal wall was relaxed, a tumour could be felt, hard, round and circumscribed, in right hypochondrium, moving up and down on respiration. The fingers could be pressed down above the upper limit of the tumour, where a movable kidney could be felt underneath the tumour.

The subsequent operation showed an inflamed and distended gall bladder containing 120 stones. It was removed, the patient left in good health a month later, and has remained perfectly well ever since.

The following case, also, shows a similar difficulty in diagnosing kidney affection from those of the gall-bladder.

Case II.—A married woman, aged 44, complained of pain in the right side, cramps in the stomach, and difficulty in passing water.

She had noticed a lump in the region of the liver which frequently changed in size, when it decreased she passed much urine. She was never jaundiced. Her appetite was poor, and all her distress was referred to the stomach.

On examination, the stomach was somewhat low. The urine was found to be normal.

In the right hypochondrium, a tense elastic tumour, extending from the ribs almost to the iliac crest, could be felt. It was moderately painful, and movable, but it only moved very slightly, if at all, on respiration.

It could not be pushed upwards, but well backwards, and a little towards middle line.

The liver dullness was continuous with that of tumour.

The diagnosis made was Intermittent Hydronephrosis.

The main reasons for this were, (1) history, (2) change in size of tumour and amount of urine.

An operation was performed, and the tumour found to be the right lobe of a liver which reached down below umbilicus.

The gall bladder extended 1 inch beyond the liver border, and was adherent to the omentum. Wedged in the cystic duct was a small stone, and the gall bladder contained six more stones and clear bile.

Cystectomy was performed, and the liver fixed in its place with catgut sutures.

The patient's subsequent health showed marked improvement.

When an illness may show such varied interpretations as were given in the above two cases, it may be well to study for a little the signs and symptoms which may lead to a correct diagnosis, before appealing to surgery.

History—This often affords the medical adviser a good guide to the pathological condition present.

For instance, *catarrhal jaundice* is almost always an extension of a gastro-duodenal catarrh, most commonly following indigestion, but also secondary to chill or exposure. Conditions of portal obstruction, such as chronic heart disease or Bright's disease, may also cause it, and it may occur after malaria, or in some infectious fevers such as pneumonia, typhoid, and influenza. Occasionally catarrhal jaundice occurs in epidemic form, but this should only cause difficulty in diagnosis in the earlier cases.

The patient usually says that there was no pain at the onset, but dyspepsia and uneasy sensations in the region of the liver, and pain later on in the back and limbs. His general nutrition will probably be good, and the illness is not in itself severe enough to prevent him going about.

Contrasting this with a case of acute infectious cholecystitis, we find that about 1 in 6 of the latter occur suddenly without any known pre-existing disease. Jaundice is not often present, but there is severe paroxysmal pain, nausea, vomiting, prostration, and marked local symptoms and signs. The pulse is rapid and temperature raised, whereas in catarrhal jaundice, the pulse is slow and fever is only slight if present at all.

Acute infectious cholecystitis is, in fact, often mistaken, and consequently operated on, for appendicitis, or acute intestinal obstruction.

With reference to this, Kehi says, "The confusion of appendicitis with acute cholecystitis is not so rare in both diseases the pains may be very similar, and concentrate themselves in the stomach and navel. In addition, there is constipation and vomiting. Even the relations of the temperature are not decisive. If the liver is dislocated downwards (tight lacing, etc.) and the inflamed gall-bladder adherent to the colon, there can be felt in the caecal region a tumour

which may simulate a peritoneal exudate, while it represents the gall-bladder imbedded in soft adhesions'

Age and sex—Women are much more prone to trouble of the bile passages than men of the cases of cholelithiasis, $\frac{3}{4}$ occur in women, while cancer occurs in the proportion of 4 to 1 (Ames). But primary cancer of the bile ducts is equally common in men and women. It is an interesting fact that 90% of women suffering from gall stones have borne children (Naunyn). In some women also, there is an important point to be remembered, *viz.*, the frequency with which a tumour formed by the liver or gall-bladder may be mistaken for chronic appendicitis.

50% of the cases of stone occur in persons over 40 years of age, while it is rare under the age of 25. This is of no use in diagnosing from malignant disease, as the latter occurs late in life also.

Symptoms and physical signs—These are numerous and very varied, and taken in conjunction with the history, assist greatly in forming an exact diagnosis.

The following are the most important—

- 1 Pain and colic
- 2 Nausea and vomiting
- 3 Fever
- 4 Jaundice
- 5 Haemorrhage

6 Local signs, such as tumour, rigidity of abdominal wall, and tenderness.

All these may assist in forming a correct differential diagnosis, and so lessen the number of cases requiring an exploratory laparotomy.

1 Pain and colic—The pain may be acute or chronic in character. The sudden paroxysmal attack of acute pain, known as "biliary colic" is well-known, and is due to the migration of a gall-stone along the duct.

But there are other causes of acute paroxysmal pain in the abdomen besides gall-stones, and these must not be forgotten. It is "a common feature of the passage of a hard body along a mucous canal scarcely large enough to contain it," and should not be mistaken for renal colic, due either to passage of a stone, or to acute hydronephrosis caused by kinking. The cause of acute abdominal pain is often difficult to diagnose, and the patient may be too collapsed to give any help, while localising symptoms may be entirely absent.

All the following should be kept in mind, when attempting a diagnosis—

Perforation of stomach, intestine, or appendix

Rupture of a gravid tube, or ovarian cyst

Volvulus of intestine, or acute obstruction from a band

The colic associated with passage of indigestible substances through alimentary canal

Sudden impaction of gall-stone in common or cystic duct

Sudden impaction of gall-stone in ileum
Perforation of gall-bladder
Acute infective cholecystitis

The pain of acute infective cholecystitis is very severe, is difficult to diagnose in many cases, and needs prompt surgical interference. History is often a guide and (under that heading) other accompanying symptoms, have been mentioned which help in forming a diagnosis. Cancer of the bile-passages may give rise to pain which is very severe and paroxysmal in character (Osler), but there is usually persistent pain and tenderness in between the attacks. As a rule, it may be said that colic is much commoner in cases of stone than of cancer.

Rupture of echinococcus cyst of liver
Rupture of aneurysm of visceral artery, or its sudden thrombosis

The renal conditions above mentioned

Gastric crises in tabes

Lead colic

Chronic pain—This occurs, as just mentioned, in many cases of cancer, but it is a fact to be noted that extensive cancer may be present without any pain.

Chronic cholecystitis and cholangitis give rise to a continuous dull pain, which must be carefully distinguished from that of chronic ulcers over the pylorus.

Adhesions between a gall-bladder and colon (the result of an acute peri-cholecystitis), and cancer of the hepatic flexure of the colon, produce painful symptoms, the exact cause of which is often hard to diagnose.

In women an exact diagnosis is even harder, and, as Bland Sutton remarks, "persistent right-sided pain in women may relate to—

- 1 The excretory apparatus of the liver
- 2 Stomach and duodenum, colon, caecum and appendix
- 3 Kidney and its ureters
- 4 Right ovary and fallopian tube
- 5 Any combination of them

In connection with this, he quotes a case which occurred in his own practice, and which is instructive in showing how difficult a diagnosis may be in complicated cases, and also how useful an exploratory laparotomy may be in its results—

Case III—Patient was a woman, aged 30. She was one night suddenly seized with acute pain causing her to scream.

A physician in the house diagnosed ovarian tumour which had rotated and twisted the pedicle.

Her own doctor diagnosed gall-stone colic.

Three days later, under ether, Bland Sutton diagnosed appendicitis.

The operation revealed an abdomen full of blood due to rupture of right gravid fallopian tube.

The gall-bladder and cystic duct contained several large calculi.

The appendix was the seat of chronic inflammation.

In spite of her serious condition, the operation was a success, and the patient recovered.

This case was also an instance of a fact which is often useful in diagnosis, namely, that gall-stone colic occurs characteristically in the night on an empty stomach, about 5 hours after eating.

2 Nausea and vomiting—These symptoms often accompany biliary colic, but they may persist when the colic has subsided, and a patient often seeks relief from them with the idea that the trouble is primarily gastric, and without any suspicion that the fault lies in the gall-bladder.

Such cases are often due to impaction of a stone in the cystic duct, but it is not at all uncommon for them to be mistaken for pyloric stenosis or indigestion, especially when jaundice is absent. Kehl mentions a series of cases upon which he operated, which had been previously submitted to a strict "ulcer cue" by the most eminent stomach specialists, whilst the presence of gall-stones had been positively denied. Of course, both conditions may be present in the same individual, but this only lends weight to the arguments in favour of a laparotomy with a view to cure.

The type of vomiting may resemble that of obstruction at the pylorus, but, in such cases, it must be remembered that the cause may be a gall-stone ulcerating through the gastric wall, or so large as to constrict the pylorus.

Or the vomiting may be of that incessant type associated with acute septic peritonitis, but this may be secondary to perforation of an inflamed gall-bladder. Those rare cases where a gall-stone becomes impacted in the intestine may cause the vomiting of intestinal obstruction.

In all these cases, the history must be carefully studied as an aid to diagnosis.

Jaundice—This is a very important symptom in any doubtful abdominal condition, for it enables one to say that (whatever the primary cause may have been) the trouble has invaded the liver or its excretory apparatus.

Murchison's table of the causes of jaundice is well known, and may be found in almost any textbook. It will be useful, however, to have a shortened form of it in our minds when confronted with a case showing this symptom, and therefore I append the following—

Jaundice may be—

(I) *Unobstructive*—This occurs in specific fevers, *i.e.*, yellow fever, malaria, typhus, typhoid and relapsing fever, scarlet fever and pyæmia. Also in phosphorus, arsenic, and snake poisoning. In acute yellow atrophy of liver, and in icterus neonatorium. Recently several instances have occurred in England in the abdominal type of influenza.

(II) *Obstructive*—May be due to—

I Foreign bodies in common duct, *i.e.*, stones, and rarely ascaris and distoma.

II Inflammatory affections and their consequences, leading to ulceration, stricture and even obliteration of the bile-duct.

III Tumours arising primarily in the excretory apparatus of the liver.

IV Tumours arising in adjacent viscera, and involving or pressing on duct, *i.e.*, tumours of liver, pancreas, stomach and kidney. Enlarged glands in portal fissure.

V Mobile kidney, dragging on duodenum.

VI Rarely an enlarged spleen, especially if it is very moveable.

The jaundice of the unobstructive type is—except in the cases of phosphorus and arsenical poisoning—not deep, and the cause of the jaundice is usually easy to recognise.

Even if the exact nature of the primary cause is not known, it is unlikely that the condition will lead any one to advocate an exploratory laparotomy.

In obstructive jaundice, however, there may be considerable difficulty in deciding on both the cause of the trouble, and the line of treatment to be adopted.

Cases of inflammatory jaundice are impossible to prove without an operation, but no good results if an operation is performed. The possible causation (chill, alcohol, indigestion, or malaria) may help, but a case should not be left too long, and, if it persists for 3 months, an exploratory laparotomy should be seriously considered.

On the other hand, in acutely occurring jaundice, it is necessary to consider very carefully the advisability of any operation. Such a procedure should only be advised when fever occurs, severe symptoms of cholangitis become evident, the appetite fails, and progressive loss of strength sets in.

Obstructive jaundice may be permanent or intermittent and careful enquiries should be made in this respect.

As a rough rule, it may be said that permanent jaundice is due to malignant disease, while intermittent jaundice is due to stone.

But this is by no means always the case, for an intense and permanent jaundice may be caused by the plugging of the diverticulum of vater by mucus (in catarrhal jaundice) or by stone, while there may be extensive cancer of the gall-bladder without any jaundice whatever. It is true, however, that this symptom is more constant in malignant affections of the bile passages than it is in cholelithiasis. According to Musser's statistics, 69 per cent of cases of cancer of the bile passages have jaundice, whereas it is absent in 80 per cent of all gall-stone cases.

Though malignant disease may be present without a trace of jaundice, it is uncommon to find intermittent jaundice from such a cause. Therefore, the intermittent type is opposed to a diagnosis of malignancy, while it favours gall-stones or other less dangerous causes (such as moveable kidney or spleen kinking the duct). But this does not mean that the case should remain unoperated on. Far from it. Quite apart from the pain and colic caused by stones, these

latter are a great source of danger to the patient.

Not only may they cause complications from obstruction, ulceration, or perforation, but they are often the precursors of cancer of the bile-passages, and it is generally held that the latter is set up by the constant irritation of the bladder by the stones. Kelynack says "while gallstones are found in from 6—12 per cent of all general cases (*i.e.*, coming to autopsy), they occur in association with cancer of the gall-bladder in from 90—100 per cent."

Jaundice, then, is a very useful symptom as an aid to diagnosis, but from the patient's point of view, it is much more. The secondary symptoms which are caused by it are also important.

The yellow colour of the skin is a source of annoyance and much mental trouble to the sufferer, and this may react deleteriously on the patient's health.

There is also much sweating, which causes discomfort, and as the sweat contains bile pigments the clothes become stained.

Piuritus is often an almost unbearable accompaniment of jaundice, and patients would often give almost all they possessed to obtain relief.

The presence of bile in the blood also causes a very slow action of the heart, and a great tendency to haemorrhage owing to the retarded coagulation of the blood. This may give rise to *purpuric spots* all over the body, and there is always the danger of a severe haemorrhage coming on spontaneously. This fact should be remembered in all operations on jaundiced patients, and is one of the strongest objections to an exploratory laparotomy.

Case IV—In 1906 I saw a man, aged 48 suffering from deep jaundice and intolerable itching. He remained in hospital for 3 weeks, during which time every endeavour was made to find out the cause of the jaundice, and also to allay the itching. The physician in charge felt sure it must be malignant disease, owing to the permanence and depth of the jaundice and the gradual wasting, but no primary seat of cancer could be found, and the gall bladder was only slightly enlarged.

In the end, the patient left because the *pruritus* could not be allayed and an operation was not thought desirable. A year later he was in much the same condition, and had endured continued acute distress.

A case such as that should have been given the chance of a cure by operation, and the length of time he has been ill makes the diagnosis of malignant disease less and less likely, for cancer usually kills in from 3—15 months.

A similar case, but one of longer duration, shows the good result that may result from operation.

Case V—Patient, an elderly man, gave the following history—Eighteen to twenty years ago he had cramps in the stomach, four or five times nearly every night. They yielded to morphia. Shortly before, he had acquired syphilis which was properly treated.

Four years ago jaundice appeared, without pain or colic.

Fever from time to time, accompanied by marked emaciation and loss of appetite.

He tried Carlsbad and Kissingen cures.

In August of that year a diagnosis was made of "cancer of liver."

In September of that year it was called "syphilitic liver."

The following March he underwent the inunction cure at Wiesbaden for syphilis, with no result. He also tried the oil treatment. Liver at that time was hard and enlarged but there was no pain.

For 2 years he had persistent jaundice, and unendurable itching of the skin, for which countless remedies were tried.

There was no diarrhoea or constipation, pain or feeling of pressure or distress in the regions of the stomach or gall bladder.

On admission, he was fairly well nourished and moderately jaundiced. The liver was markedly enlarged. Right lobe below umbilicus. The upper surface was smooth, regular, and only very slightly sensitive to pressure.

Diagnosis was almost impossible. The cramps occurring 20 years ago were probably gall stone colics.

Against the diagnosis of stones was the absence of pain, and the continuous jaundice, in favour of stone was the fever. Against Cancer was the fact that the jaundice had lasted for 4 years, and also that the surface of the liver was smooth, not knobby.

An exploratory laparotomy showed a gall bladder completely invested in adhesions which were especially firm and cordlike between the gall bladder and duodeno hepatic ligament, and which were evidently hindering the escape of bile into the intestine.

The choledochus was tensely distended, and the gall bladder collapsed on severing the adhesions.

There were no stones.

For safety, an anastomosis was made between the stomach and gall bladder, and the result of the operation was very good.

The operator (Kehr) says with regard to chronic jaundice—"It is objectionable to undertake an operation if a general disease of the liver or a widely advanced carcinoma is a certainty. Yet, after all, there are cases in which one can never be positive whether the jaundice is due to tumour or stone. In the latter case, the diagnostic procedure acquires the value of a curative one."

Instead of asking ourselves the question—Is the case malignant or non-malignant? and then putting aside the former as unoperable, we should say, "Is the case curable without operation?" If it is, proper measures should be employed. But if not, the question arises—Are there any insuperable objections to an operation? and if there are none, we should operate.

The main objections to be considered are—

1. The definite presence of a primary cancer which has led to obstruction and jaundice by secondary deposit.

2. An advanced condition of cancer of the gall bladder as shown by much irregular enlargement, palpable deposits in the liver, etc.

3. A tendency to haemorrhage, as shown by purpuric spots, scratches, or haemorrhages already occurring from a mucous membrane.

Halsted reports a case which shows the good results that may be obtained in a case of this kind.

Case VI—An elderly woman was admitted for jaundice of some months duration. She had no pain, but a greatly enlarged gall bladder, and was becoming progressively emaciated.

He operated, and found an obstruction at the orifice of the common duct. The duodenum was opened, a cylindrical celled epithelioma of the ampulla of Vater removed, and then the common duct was stitched to another part of the duodenum. The patient made an uninterrupted recovery, and 14 weeks after the operation, had gained 25 lbs in weight and was passing bile in the faeces.

Fever — This is a very variable symptom in affections of the bile passages, and does not help much in deciding for or against operation.

During an attack of biliary colic, the temperature rises to 101-103° and subsides quickly between the attacks, but intermittent fever is uncommon in cases of complete occlusion. Occasionally there may be rigors, and in foreign countries such as India this must not be mistaken for malarial fever or tropical abscess.

If secondary infection takes place (Acute Cholangitis or Cholecystitis) the temperature becomes septic, rising to 104-5°, and falling to normal.

The fever of acute septic cholecystitis is simulated by any septic affection in the abdomen. It is hard to distinguish from a pyelonephritis, sub-phrenic abscess, acute pneumonia, biliary abscess, or a retrocecal appendix perforating and giving rise to an abscess under the liver. In cases of incomplete obstruction, with suppurative cholangitis, recovery never takes place (Osler) and an operation is of no avail.

In addition to those cases of obstruction accompanied by rigors, tropical abscess may be wrongly diagnosed in some cases of rapidly growing cancer of the liver, which not infrequently cause high fever.

In this connection the following case is instructive.

Case VII — A man, aged 48, who had been healthy, except for occasional pain in the stomach for some years accompanied by eructation, complained in March of violent girdle pains in the epigastrium, lasting some days.

There was no vomiting.

After this attack, he was free from pains for 3 weeks, and then they returned, and were felt especially at the level of the umbilicus. Again no vomiting.

He improved, but for 3 weeks had continued discomfort and became progressively emaciated.

On admission to hospital in June he had much pain and a temperature of over 102°. The liver was enlarged and sensitive. There was no jaundice, and the gall bladder could not be felt.

The other organs were normal.

The fever was so high, and the pain so pronounced that it was thought to be a severe inflammation of the gall bladder, but the subsequent operation showed it to be cancer of the liver, while the gall bladder was normal.

In this case therefore, the exploratory operation could do no good, and he died shortly after.

Tumour — This is perhaps the most important, and yet most puzzling, physical sign of all. There may be grave mischief within the abdomen and yet no tumour, while, on the other hand a marked tumour may mean nothing more than an abnormally shaped right lobe of the liver, and be a sign of very little importance.

The diagnosis of tumours which might be due to affections of the gall-bladder and its ducts, is such a large question that a book could be written on this subject alone. It is only possible,

therefore, to mention shortly those tumours which oftenest lead to an exploratory laparotomy.

These may be roughly divided into 3 classes —

1 Tumours which simulate, but are not due to the gall-bladder or bile ducts

2 Tumours, caused by the G. B. or its ducts, which simulate other abdominal affections

3 Compound tumours, caused by the gall-bladder *plus* other structures within the abdomen

1 The pancreas is one of the worst offenders in simulating gall-bladder tumours. An acute pancreatitis may be mistaken for cholecystitis, especially if haemorrhagic and chronic pancreatitis for cholelithiasis, obstructions of choledochus, or malignant disease of the gall-bladder. The pancreas may be the seat of cancer and give rise to obstruction and persistent jaundice, or the pancreatic duct may be obstructed by a stone which may give rise to a tumour resembling that of a gall-bladder, and large enough even to give rise to jaundice by pressure on the bile duct.

Case VIII — The following case shows the difficulty of diagnosis in the acuter type —

A woman, aged 60, a cook, was seized with severe vomiting, and was also very constipated.

On examination, she had a tumour at the upper level of the right linea semilunaris.

The diagnosis seemed to be between a gall-bladder tumour and growth of the pylorus. The vomiting was not like that of pyloric obstruction, while the tumour though marked, was not as definite as a gall-bladder tumour might be expected to be. The right rectus was rigid. An operation was performed, and a tumour found, which resembled, but was not, the gall-bladder.

It pushed both liver and pylorus forward.

The tumour was tapped, and blood stained fluid drawn off. It was then found to be the lesser sac.

The diagnosis was made of acute haemorrhagic pancreatitis. The sac was drained, and patient went out well.

A year later she came into hospital again with vomiting, and was found to have a large cystic swelling in the right hypochondrium.

This was opened from the loin, and a quart of black charged blood drawn off. A binder was applied and the wound was drained with a rubber tube.

The cavity filled up again in about a week.

A fresh operation drew off another quart.

After this there was no more pain or swelling, and when last seen (a year later) she was quite well.

As regards the cases of chronic pancreatitis and pancreatic stone that simulate gall-bladder disease, Mayo Robson has written accounts of several in which the diagnosis has been difficult, and which have been improved by a suitable operation.

Swain describes an interesting case upon which he operated with complete success —

Case IX — A missionary who had been previously quite healthy, became ill and jaundiced while up country in Northern Africa. The jaundice was obstructive in type and persistent, and patient wasted considerably.

He was sent home, and about 5 months later was seen by several English physicians and surgeons, all of whom thought the condition was malignant.

Swain was inclined to the same opinion, owing to the wasting, persistent jaundice, and the large size of the gall-bladder.

But he decided to give the patient the chance of an operation, and this revealed the fact that the obstruction was due to a hard gland about the size of a filbert, lodged between the duodenum and the terminal part of the

common bile duct, and completely occluding the latter by pressure

This enlarged gland was secondary to what had evidently been a chronic inflammation of the head of the pancreas. Both were fibrous, the latter markedly so and constricted by cicatrices.

Removal of the gland caused complete removal of symptoms, and restoration to health.

This case shows firstly that persistent jaundice and large G. B. is not always cancer, and secondly, that obstruction may be secondary to chronic pancreatitis in an unusual manner.

Another tumour of the liver that may simulate the gall-bladder is a *Hydatid*.

This is usually easy to diagnose, but in one case that came under my notice, the hydatids had also invaded the gall-bladder.

Case X—This patient, 2-3 years before admission, had had an attack of pain in left part of umbilical region, accented by jaundice and sickness. Two similar attacks since then, one lasting a month, the other 11 days.

On admission to hospital he was recovering from an attack which had lasted one month. There was moderate jaundice, and a tender spot, dull on percussion, was present one inch to left of, and a little below, umbilicus. Liver margin could be distinctly felt through the abdominal wall.

A diagnosis of *gall stones* was made.

Operation revealed a gall-bladder adherent to omentum, and duodenum, and crammed with hydatids. There was also a hydatid protruding from the surface of the liver.

Recovery was somewhat slow, but he has remained well ever since.

In this case, a diagnosis of hydatids was almost an impossibility, but operation was the correct procedure, and was justified by the result.

(Cancer of the pylorus, or hepatic flexure of the colon, produces tumours which are among the most difficult of all to diagnose correctly, but this difficulty is usually due to the involvement of other structures and so will be mentioned under group 3.)

2 Gall-bladder tumour simulating other affections. In women with lax abdominal walls the liver may sink towards the pelvis and may be at the same time constricted by stays or a waist belt. In such cases the lower part of the liver may simulate a tumour due to appendicitis, and this is still more likely if there has been any local peritonitis and the lobe of the liver has been bound down to omentum or abdominal wall by adhesions.

It must be remembered also, that in women with the right lobe of the liver rounded, and separated from the main body of the organ by a sulcus, a tumour may be formed which (felt bimanually) exactly resembles a kidney. In such cases, free lateral mobility will usually exclude a kidney, and in the words of Kehl, "The aortal pendulum-like movements of the tumour favour gall-bladder as against right-sided movable kidney. A gall-bladder, if pushed posteriorly, will return to a position just behind the anterior abdominal wall, whereas a movable kidney will remain in its original place, if put there."

Nevertheless, the diagnosis between the two is sometimes very difficult (*v. Case XI infra*), and Bland Sutton says that a distended gall-bladder may be often mistaken for a movable kidney, and another distended with mucus, for a condition of hydronephrosis, or *vice versa*.

3 "Compound" tumours

These are due to the adherence of one structure to another as a result of inflammation. The organs which, in addition to the gall-bladder, are commonly involved in these tumours, are the liver, pylorus, and first part of duodenum, hepatic flexure of the colon, head of pancreas, portal glands, and the omentum.

In many cases it is very difficult to say whether they are malignant or not, as cancer is comparatively common in all, and quickly mats neighbouring structures together.

The following cases, for note of which I am indebted to Mr. Charles J. Symonds, exemplify the difficulty of diagnosis in these compound tumours:

Case XI—Mary W., aged 53, was admitted to hospital in Sept. 1895. She was married and had had 9 children. No previous illness. She had been losing flesh for the last 6 months, and for the last 3 months had noticed a painless tumour. 6 weeks before admission she had an attack of pain in the abdomen and vomiting. Since then the lump had been painful and tender. No jaundice.

On admission, abdomen easily palpable, in the right hypochondriac region was a tumour extending 4" below the margin of the ribs, transversely it measured about 3'. It moved freely with liver on respiration and also from side to side. It was hard and nodular.

Liver dulness normal. A London specialist, who saw the case, thought that a floating kidney, adherent above to the liver, was the probable explanation.

The hard and nodular character, together with the mobility, were opposed to simple enlargement of the gall-bladder, and the tumour seemed to press deeper into the loin than does an enlarged gall-bladder.

There were no general signs of malignant disease, no enlargement of liver, and no ascites.

Exploratory laparotomy was decided upon, and showed the gall-bladder and colon united by a hard nodular mass. By infolding the anterior and lower surface of the colon, a large saucer-shaped ulcer, with raised edges, was felt, attaching the upper and back part of the colon to the G. B., the infiltration extending to the liver. No nodules of growth in liver or peritoneum. The kidney was normal in size and position.

The case appeared to be one of primary disease of colon, extending to the gall-bladder and liver with a large cauliflower-like ulcer. The inflammatory material was hard and nodular and exactly like an infiltrating malignant growth.

The abdomen was therefore closed, and patient was discharged in October in fair health.

And yet, the diagnosis of the tumour, even with the aid of an operation, proved wrong, for it gradually disappeared, and (4 years later) the patient was quite well.

The explanation would seem to be that a large gall stone was passing into the colon, and the case was obtained just after the perforation, and onset of peritonitis.

This case also shows how (as above mentioned) a gall bladder tumour may resemble a kidney.

The second case (XII) was that of a woman aged 40, also admitted in September, 1895.

She complained of abdominal pain and tumour. Five years before, she had an attack of jaundice, lasting 14 weeks, and said to be due to gall stones.

Ever since, she had been subject to pain in right hypochondrium, and this had become continuous during the previous two months. But there had been no jaundice during these two months.

A sudden acute pain caused her to be brought up to hospital.

On examination, the most painful spot was 2" above umbilicus and to right of rectus.

Palpation showed a large mass descending from the edge of liver down to 1½" below umbilicus. This mass was pulsating markedly. Immediately below the centre, the mass was hard and nodular, and the edge of the mass was rounded.

The most striking point about the tumour was the marked pulsation, which closely resembled the expansile form of aneurism. The mass appeared to enlarge laterally, and the pulsation was quite unaffected by position.

Apart from the pulsation, the most probable diagnosis was cancer of the gall bladder or colon. The history of gall stones strengthened this view.

But the pulsation was a difficult symptom to account for, and Dr Frederic Taylor suggested that the condition was in aneurism of the hepatic artery, while the large size and nodular character of the mass was due to adherent and thickened omentum. In view of the great pain, it was decided to explore.

A large mass was found connected with the liver, and overlying and adherent to it lay the great omentum. On dividing the latter, the gall bladder thickened and filled with calculi, was exposed.

Between the G.B. and pylorus, and covering the duodenum, was a hard nodular mass, involving deeply the walls of all three structures.

On infolding the pylorus, the hard everted edge of an ulcer, exactly like epithelioma, could be felt. There were enlarged glands in the gastro hepatic omentum. The whole mass could be lifted from the aorta which was the evident source of a communicated pulsation.

Here again, inoperable malignant disease was diagnosed, and the abdomen closed.

For some months the pain continued and necessitated opium, but at the end of a year there was marked improvement; the tumour slowly disappeared and the patient regained health. Six years afterwards, the woman was in perfect health and free from gall stone attacks.

There can be no doubt that there was ulceration between the gall bladder and duodenum, and that the hard nodular mass was inflammatory only. The gallstone must have been of large size, and may have been lying in the centre of the mass at the time of operation.

The opening must have involved the pylorus, as it was here that the thickened edge of the apparently malignant ulcer could be felt.

I have quoted these two cases somewhat in detail, partly because of their similarity, but also to show how difficult these compound tumours may be to diagnose. If they are sometimes diagnosed as malignant by an experienced surgeon, even with the aid of an exploratory laparotomy, how can one be certain of the pathological condition from mere clinical signs alone?

In the second case also, it should be noted how closely a thickened and nodular omentum may resemble a malignant growth.

Lastly, these two cases are types of a group which is quite common, and yet difficult to diagnose, i.e., where a large gall-stone finds its way

into the colon by direct ulceration through the adjacent walls, instead of following the path of the bile duct.

Other organs may, by their inflammation, give rise to similar matting together into an irregular tumour, and of these especial mention may be made of duodenal ulcers, but by far the commonest non-malignant cause is calculous cholecystitis in some form or other.

The question as to whether the condition is inflammatory or malignant comes up in a large majority of difficult cases, and so the enumeration of some of the main points of difference may well end this part of my remarks.

1 *Jaundice*—Absent almost always in inflammatory processes in the gall-bladder, and also in the beginning of gall-stone disease. In stone, jaundice is variable, in malignant disease usually persistent and intense.

2 *Pain*—Less common in cancer than in stone. Severe attacks of pain, not to be distinguished from gall-stone colics may be due to the presence of adhesions kinking the cystic duct.

3 *Palpation*—In cancer, the G.B. tends to be much larger and therefore more often palpable. It also tends to be irregular in outline. A purulent exudate may occur in the G.B. without a tumour being palpable, for gall-bladders which have been often inflamed contract down so that inflammation can no longer distend them.

4 A pyriform or ovoid tumour of G.B. not painful without jaundice or enlarged liver, favours diagnosis of G.B.

5 A painful distended tumour of G.B. favours empyema.

6 A painless tumour of G.B. and much jaundice favours obstruction of choledochus by growth.

7. A hard, nodular, painful tumour of G.B. without jaundice favours carcinoma of an inflamed G.B.

8 Ditto with jaundice favours carcinoma of G.B. with implicated portal glands.

9 Fever is often present with stone. Absent with growth except in late stages.

10 Cachexia is commoner in malignant disease than simple stone, but is also fairly common in cases of stone accompanied by fever.

11 Passage of a stone in the faeces is not common, but should be looked for to aid diagnosis.

12 Ascites may be present in malignant disease not in stone.

13 The spleen is said to be enlarged in cases of stone, not in those of growth.

14 In acute obstruction of the choledochus, more or less pronounced jaundice appears, which quickly ceases as soon as the stone has passed the papilla of the duodenum.

In addition the history may help.

15 Previous colic favouring stone.

16 Permanent jaundice and enlarged gall-bladder, appearing after a long history of gall-stone attacks, suggests onset of malignant disease.

17 Duration of disease Cancer is usually fatal in 12 months at most

The above account of the various clinical aspects of affections of the gall-bladder and bile ducts does not aim at completeness. Easily diagnosable types have not been included, the idea being more to show only those types which often cannot be diagnosed. And there remains now but to collect the types in which the knowledge thus gained would lead us to advise an exploratory operation as desirable and justifiable.

The cases for which an exploratory laparotomy is desirable may be, for the sake of convenience, divided into acute and chronic, though there is no marked division between the two types.

A Acute

1 Acute attacks of colic without definite physical signs to lead one to a sure diagnosis.

(a) The colic may be devoid of severe general symptoms and doubt may be entertained whether it is biliary, renal, or gastric, or due to tubercle or even some poison, such as lead.

(b) Or there may be severe signs of general collapse, making one think of perforation, torsion of an ovarian pedicle and other acute abdominal conditions.

2 Cases of acute (possibly suppurative) cholecystitis. These are often hard to diagnose from a iecto-coecal appendicitis, pyelonephritis, sub-phrenic abscess, acute pneumonia, occasionally diaphragmatic pleurisy and the terminal stages of cirrhosis, or cancer of the liver.

3 Acute pancreatitis may simulate a morbid condition of the gall-bladder, as in Case VIII.

B Chronic

1 The cause of vague, but more or less permanent pain at, or around the umbilicus, or more often under the right rectus, is hard to diagnose. There may be no physical signs whatever, or the right rectus may be somewhat rigid.

Is this pain due to gall-bladder or pyloric adhesion, or is it simply dyspepsia?

Case 11 in appendix is an instance of this difficulty.

The whole of the pain may in a few cases be nothing more or less than neurasthenia.

2 Cases of constantly recurring attacks of colic, without physical signs. Even if it is fairly certain that the colic is due to gall-bladder trouble, doubt sometimes exists as to whether a cure can be effected without operation. But, as Kehi says, "if a patient has been tortured for years by severe colics, without it being possible, in liver or G B to find any sort of a morbid condition; if he is greatly impeded in his avocation by these pains, if his bodily strength fails, if all possible internal treatment has been employed without success; then an exploratory incision is

not only permissible, but is absolutely the duty of the physician."

Cases III and IV in Appendix illustrate the benefit derived in these cases.

3 When doubt exists whether condition is due to choledolithiasis or ulcer near pylorus, operation is often advisable.

Case V in Appendix is a typical case, while Case VI shows great variation in the diagnoses made, and a curious complication revealed at the operation.

4 Persistent jaundice, unaccompanied by progressive enlargement of liver or definite sign of cancer elsewhere.

Two cases where operation cured the condition have already been described. A third case is included in the Appendix (No VII).

5 A liver or gall-bladder tumour low down may be difficult to diagnose from chronic appendicitis.

6 A distended gall-bladder and moveable kidney or hydronephrosis have been mentioned as giving rise to similar symptoms in some instances. Case I showed this.

7 Case X showed that diagnosis between gallstones and hydatid is not always possible. Nevertheless, exploratory laparotomy was the correct procedure.

8 The difficulty of diagnosis between obstruction of choledochus by gall-stone and chronic pancreatitis or pancreatic stone has already been gone into. In one case that came under my notice both the first and second conditions were present.

9. Cases of pyloric obstruction are difficult. It is often doubtful whether it is due primarily to a cicatrising ulcer near the pylorus or whether the primary seat of the trouble is the gall-bladder.

10 So far all malignant cases have been omitted. But in the majority of doubtful cases the question arises "Is it or is it not, malignant?"

Calculus cholecystitis is often very difficult to diagnose from cancer of gall-bladder.

If we think it is malignant disease, we must ask ourselves, "where is the primary seat, and is the case operable?" As mentioned under the heading of "Tumour," the commencement may be in pancreas, pylorus, colon, portal glands, and liver as well as gall-bladder, and as Sutton remarks, "When a cancerous G B is sessile on the liver, and there is cancerous infiltration of adjacent hepatic tissue, it is mere guess work to decide between enlarged G B or cancer of liver."

However, in all cases where the symptoms give rise to a suspicion of cancer, but without anything definite to prove it, it seems justifiable to advise an exploratory laparotomy, and the plea of all surgeons nowadays is 'treat the cases as early as possible.' The danger of delay, to

allow of palliative treatment or to establish a diagnosis, is greater than that of an exploration in these days of antisepsis.

But there is one point of importance to mention before conclusion — If a doctor has a patient whom he thinks needs operation let him send that patient to the best surgeon available. The results of gall-bladder operations in skilled hands are so markedly better, and the difficulties unexpectedly met with in an exploration are so great, that the value of an exploratory laparotomy really depends to a large extent on the individual skill of the operator.

APPENDIX

Case I — F., 27 years, previously very healthy. Two years' history of stomach cramps, vomiting and constipation.

A feeling of fulness almost always present, obliged to loosen clothes.

No ver any jaundice.

Last two days, constant intense pains in G. B. region. Stools and urine normal. No fever at any time.

C O A — No jaundice. Heart and lungs normal. G. B. region very sensitive to pressure, but nothing to be felt. Spleen distinctly enlarged and palpable. P strong, regular, 75 to minute.

Operation — Tensely distended G. B. lay high up under the curvature of the ribs, no adhesions, 150 c.c.'s slimy fluid and 15 stones removed. Cystic duct obstructed by stone.

In this case the "cramps of the stomach" and the sensitiveness to pressure in region of G. B. pointed to gall stones. Fever was not detected, the liver was not enlarged, a tumour of the G. B. was not to be felt. Jaundice did not exist. Even when the belly was opened, it was difficult to find the enlarged gall bladder, sunk far backwards as it was, not to mention seeing it. And yet this operation, by reason of the stones and severe inflammation, was the only correct procedure.

Case II — U. B., 39 years, cabinet maker.

F H good.

H P I Patient on the whole healthy, but suffers from irregular stools. Often puts brace against region above navel in his work. Complains of burning sensations in stomach watery eructations, after many foods, finally vomiting, with it occur cramp-like pains under the ensiform process.

Large man, emaciated. Organs normal. Sensitive ness to pressure in region of G. B.

Operation showed G. B. adherent to omentum, stomach, and colon, but free from stones. G. B. separated and excised.

Pylorus patent. G. B. healthy.

Appetite and weight improved greatly.

In this case, traumatic influences probably caused the adhesions. The only sign of gall bladder trouble was the slight sensitiveness in that region.

Case III — M. F., house keeper, 22 years old.

History — When 12 years old, had jaundice for six weeks. No other illness.

About a year before admission she had abdominal colic, violent piercing pains, radiating to back and feet, and eructations and great weakness. Attack lasted four hours, six months later, she had a similar attack and gall stones were diagnosed.

Carlsbad cure successful, but three months after the second attack, she had a third, lasting three days, and followed by stomach trouble, loss of appetite, pressing pain after eating. Very weak and ill.

Fourth attack within a month. Operation advised, though there had never been fever, jaundice or tumour. Liver was normal, but there was slight sensitiveness to pressure over G. B.

Operation showed enlarged G. B., and extensive adhesions between duodenum and cystic duct. On separating these G. B. collapsed. G. B. excised, and patient completely cured.

Case IV — Man, gave history of several gall-stone colics, with jaundice and passage of stones. After these, he felt well for a long time, but was again attacked by colics.

In the intervals between the colics, there was no jaundice, no enlarged liver or tumour, no sensitiveness to pressure over G. B.

Diagnosis — Diseased stomach or nervous conditions.

Treatment — Medicinal, and exact dieting, but neither these nor Carlsbad treatment, or sea or mountain air, had any effect.

Every month the attacks of colic returned.

An exploratory operation showed adhesion between the cystic duct and stomach.

Excision of the G. B. completely relieved the man of his symptoms, and he was soon quite well.

Case V — Mrs. A. B., 44 years.

Five weeks before admission felt undue fulness in stomach. Pain usually occurred after eating. Three weeks later, colic appeared and vomiting and loss of appetite. Never jaundiced. *Diagnosis* — Peptic ulcer; inflammation of G. B.; Hysteria? On palpation, most sensitive spot was pit of stomach. Resistance in G. B. area, but no tumour.

Exploratory operation was difficult owing to extreme obesity. Numerous adhesions round the G. B. increased the difficulty. The G. B. itself was much thickened. It was removed, and contained one small stone.

Commenting on this case, we must note that the small G. B. lay far above lower border of liver. Colics were not pronounced. She complained of constant pain after eating (even liquid food). The exploratory operation cured the patient, after the ineffectual attempts of medicines and dieting.

Case VI — Mr. E. K., 29 years.

History — When 9 years old began to have cramp like pains in pit of stomach. Each attack lasted a day. At first they occurred about twice a day, latterly nearly every day, and almost unendurable.

Pain lessened by pressure on pit of stomach.

On three occasions attacks accompanied by vomiting. When 19 years old, a severe attack with 4 weeks' jaundice.

Gall stones diagnosed — Internal treatment afforded some relief for 6 years.

When 27, attacks of pain returned. A doctor of repute found excess of stomach acids and treated him for nervous dyspepsia. No definite cure attained.

Meals and diet had no effect on pain. Appetite good. When seen he looked well. No enlarged liver. No pain on pressure over G. B.

Pain originated in a small spot of resistance in linea alba, above umbilicus.

Operation showed a cherry sized hernia in mid line, G. B. free from stones and adhesions. Pylorus hypertrophied, in duodenum, a walnut sized very hard resistance (completely healed ulcer). Duodenum fixed to pancreas and contracting at ulcer.

Gastroenterotomy performed. Patient got completely well.

Case VII — Woman Admitted for extreme and persistent jaundice.

Diagnosis — Inoperable cancer, but laparotomy done on surgeon's advice.

Operation showed large cavity in liver, containing bile stained purulent material. (Patient had never been abroad or had dysentery.) Walls of cavity calcareous. It was drained, jaundice disappeared and patient left with a biliary fistula, but otherwise very well and suffering no inconvenience. According to her friends, she "looked 20 years younger". As the gall-bladder was normal, and there was no sign of jaundice whatever.

the primary cause seems to lie between amoebic abscess, dermoid actinomycosis and hydatid.

For several of these cases I am indebted to Kehi, and to the Surgical staff at Guy's Hospital

ULCERATED AND SWOLLEN GUMS IN THE NATIVE ARMY.

BY P HEHIR,

JIEUT COL, I M S,

Medical Officer, 2/8th Gurkha Rifles

A FORM of ulcerated, swollen and spongy gums of unknown etiology is a condition that is met with in all regiments of the Native Army. The essential pathological state that appears to be present is ulceration and suppuration of the margins of the gums, and between the gums and the teeth, so that, for want of a better term, one would designate it *suppurative gingivitis*. Its chief incidence is during the hottest summer and early autumn months, when men have run down from climatic effects, but probably chiefly from an absence of an adequate supply of fresh vegetables which occurs at this time of the year. Some cases of it are, however, to be found in most regiments at all times of the year. It is specially common during our Indian Frontier campaigns, particularly campaigns lasting over three or four months. One can recall over 100 cases in each of three out of five regiments examined in June in the Deccan some years ago, and I have frequently found from 20 to 30 cases in various regiments in the cantonments in Northern India during the last 5½ years. At the end of the Tukah Expedition some Native regiments had as many as 10 per cent of men affected with it. The condition is very widespread in the civil population at the seasons of the year mentioned above, and it is unusually prevalent during periods of drought and scarcity.

The state under reference consists of ulceration, sponginess and swelling of the gums, the mucous membrane of the tongue, cheeks, and mouth generally may be superficially denuded of epithelium, occasionally small visible ulcers occur here and there over these regions, or the papillæ of the anterior part of the dorsum of the tongue is bare of epithelium, swollen and inflamed.

The condition of the gums is, as a rule, painless, the man often does not know that anything is the matter with him, and he seldom comes to hospital spontaneously. In individual cases the actual state of the gums varies. In some they are so swollen that the teeth appear to be almost buried in them. In such cases the gums are congested and bleed readily on pressure. In others, the margins of the gums have atrophied, receded, and exposed the whole of the crowns and part of the fangs of the teeth, and present a thin ulcerating margin. Generally a large area of the gums of both upper and lower jaws is

involved, thus contrasting with pyavilhoea alveolaris, in which, except in the advanced stage, the disease is localised to the gum opposite one or a few teeth.

Occasionally the atrophy of the gums will be found associated with the accumulation of masses of dirty greyish or cream-coloured tartar on the outer aspect of the teeth. Such masses may sometimes also be found beneath swollen gums. On scaling off these masses of tartar we expose an ulcerating gum which may be very offensive. In these tartar cases the cleaning of the teeth has been neglected, because the patients have found the ordinary process of using the frayed end of a stick for this purpose, painful. These blocks of tartar are unlike the small greenish patches of calcaceous material found beneath the pockets of the gums in some cases of pyovilhoea alveolaris. In a small percentage of the cases the gums are tender, and render mastication difficult and painful. These are the only cases that seek treatment of their own accord. There is often slight foulness of the breath, exceptionally a very foul odour is given off, due probably to the presence of micro-organisms which generate indol in the diseased area. In all cases a small quantity of mixed creamy pus and mucus exudes between the gingival border and the teeth when the gum is pressed by the finger. The condition itself, if not grossly neglected for a long time, and masses of tartar have not formed, does not appear to endanger the integrity of the dental structures.

The chief micro-organisms that one has found in stained smears made from the pus have been streptococci and staphylococci, in several cases one has found an ameba very similar in morphological characters to the *Entamoeba coli*, in association with one or other kind of the bacterial forms named—this ameboid organism was never found to be anything like *Entamoeba histolytica*; and in three cases a short plump Gram-staining bacillus was seen.

The more characteristic cases have, at first sight, the general appearance of *pyovilhoea alveolaris* (Rigg's disease, false scurvy, gingivitis expulsiva), which is, however, a very chronic and somewhat formidable malady leading to atrophy of the gum, and loosening and filling out of the teeth. The essential condition in *pyovilhoea alveolaris* seems to be a purulent inflammation of the dental periosteum, in the condition under consideration, the dental periosteum remains intact. In *pyovilhoea alveolaris* we get swelling and inflammation of the gum opposite one or several teeth, the gum which bleeds on pressure, is tender, such pressure also causes a discharge of creamy pus between the gum and the tooth. The inflamed gum opposite the tooth forms pockets in which debris of food accumulates and decomposes, the gum loses its attachment to the tooth, small greenish patches of tartar may, as previously stated, form within the margin of the gum, and new bone forms on the outer and inner edge of the alveolus. The

etiology of *pyorrhœa alveolaris* is unknown, and so far no method of treatment has proved satisfactory. This latter is not the case with the condition under reference. A week's local treatment in mild cases, with proper attention to diet, proves effectual. The more severe cases, however, occupy several weeks in treatment, especially on field service, where suitable diet is not always available and the men have run down from the hardships of campaigning.

It is also similar in some respects to the condition often seen in incipient scurvy, and it is occasionally associated with the more positive manifestations of the scorbutic state, such as anaemia, haemorrhage from the bowels, extravasations into the muscles, dysenteric symptoms, etc. Like scurvy, it responds to anti-scorbutic treatment plus local measures. It seems in India and in Indian frontier warfare to precede the appearance of the actual signs of developed scurvy. It was very prevalent in Somaliland amongst Native troops and followers in 1903-04 before the outbreak of actual scurvy. In the vast majority of cases there is little in this state to justify one's calling it scurvy, one is personally disposed to consider it to be an ante-scorbutic condition. It is premature, however, to express any definite opinion as to its nature or etiology.

The peculiar state of malnutrition closely connected with a defective dietary which gives rise to scurvy may, in its earliest and less pronounced stages, manifest itself in a variety of ways. The condition described here is possibly one of these.

Apart from a scorbutic taint and *pyorrhœa alveolaris* (which is not a common condition in the Native Army), swollen and spongy gums is generally due to a want of cleanliness of the teeth, and in the Native Army this is seldom an initial cause of the condition described, as most Native troops are extremely clean in regard to the state of their teeth and mouth.

Whilst it occasionally occurs in emaciated and anaemic men, it is most frequently found in those who are fairly well nourished. It is very insidious in its onset, and while it lasts, renders its victims liable to any one of the numerous maladies of the air-passages and bowel which may be associated with oral sepsis. Apart from the inhalation or ingestion of germs of actual specific disease, and septic and putrefactive germs, the constant absorption of the products of septic and putrefactive micro-organisms from the diseased surface of the gums must tend to produce a general lowering of vitality, and a reduced resistance to disease causes generally, which is a point for consideration. In the normal condition of the mucous membranes of the lungs and alimentary tract, the disease-germs reaching them, unless in overwhelming numbers or of unusual virulence, produce no evil consequence, the reverse may be the case when these mucous membranes are in any way damaged from any cause. The many varieties of bacterial forms

that are frequently present in the mouth, nasal and respiratory passages, and alimentary tract—the bacilli of tuberculosis, dysentery, enteric fever, pneumococcus of pneumonia, streptococci, staphylococci, etc., usually operate on a barren soil in thoroughly healthy men, the cells of these passages being then in their highest state of physiological defence and antagonism. The condition described specially tends to create a vulnerability of the alimentary tract to invasion by one or other of the micro-organisms associated with bacillary dysentery and epidemic infective diarrhoea. When a large number of these cases are occurring in a regiment, there will usually be found an unusual number of cases with symptoms of ordinary catarrhal dysentery, diarrhoea, or other disturbances of the alimentary tract. It is possible that the irritation of the mucous membrane induced by the septic organisms swallowed, permits of the ordinary intestinal flora, especially the *bacillus communis coli*, taking on virulent properties. This is one of the ways in which, I believe, the last-named organism gives rise to symptoms indistinguishable from those of mild epidemic dysentery in the condition under reference. In several of these cases in which the blood serum was tested with both Shiga-Kruse and Flexner strains of the *bacillus dysenteriae*, there were no indications of agglutination. The form of dysentery met with in these cases is seldom severe, but the classical symptoms of dysentery—repeated calls to stools with the passage of small quantities of bloody mucus, tenesmus and tenesmus—are always present, they are of the type we used to designate by the term catarrhal dysentery. It is easy to understand that when this condition of vulnerability of the mucous membrane is established, such factors as chills, over-fatigue, exposure to inclement weather, drinking of impure water, improper diet and defective cooking, would still further lower the resisting power of the mucous membrane of the bowel, and render the persons so affected an easy prey to the attacks of the specific organisms of epidemic dysentery and infective diarrhoea. These are, I believe, the explanations of the high proportion of cases of dysentery that occur in Native troops and followers in Indian frontier warfare, and of a large proportion of the 31,000 cases of dysentery that occurred amongst our troops during the South African War.

As previously stated, the condition under reference is remediable. Its appearance in a Native regiment in any numbers is an indication that there is something defective in the feeding of the men, and, as a rule, it will be found that they are living on a monotonous diet consisting chiefly of rice or *atta* and dhall, with a great deficiency of fresh vegetables or flesh meat. In this connection it is desirable, wherever practicable, that Native regiments should provide themselves with a vegetable garden capable of adequately supplementing the ordinary bazaar supply throughout the year; the garden

being worked is one of the regimental institutions. One practically never sees the condition in British or Native officers, amongst other reasons, probably because of their better diet, which usually contains a sufficient supply of fresh vegetables, fruit, etc.

The periodical examination of the gums of Native troops is important. The most opportune time for carrying this out is during the mobilisation practices, and on other occasions when the whole of the regiment is being inspected as to its state of health.

In an epidemic of this condition in a Guikha regiment which one had to investigate and report upon some time ago, the following recommendations were made—

1 An issue of an ounce of lime-juice daily for a period of a month, and if the state of the gums has not considerably improved by that time, a further issue of an ounce every second day for another month.

2 The daily use of at least eight ounces of fresh vegetables (preferably potatoes and onions), for one month, and a similar quantity at least three times a week after that period.

3 The use of eight ounces of flesh meat per man twice a week.

4 The issue of half an ounce of *amchur* (green mangoes that have been sliced and sundried), or *imli* (dried pulp of the tamarind fruit) daily, to be cooked with the food.

5 The compulsory use of *atta* instead of rice for at least two days in the week for the ensuing two months.

6 That the men be advised as to the necessity of thoroughly cleaning the teeth daily.

7 The attendance at the hospital of the 82 cases of swollen, spongy and ulcerated gums for local, and if necessary, general treatment—these cases need not be admitted into hospital, nor struck off duty for the purpose of attending hospital.

8 The medical officer of the regiment to make a weekly inspection of the whole regiment, and report the results of the measures suggested.

Such recommendations as these would hold equally good on field service.

The local application which one has found most useful is either tinct or liquor iodi once a day in mild cases, and twice a day in severe cases. When there is pain and tenderness, one employs a combination of tinct iodi (3 parts), tinct aconiti (2 parts), and chloroform (1 part), when there is much swelling with ulceration of the gums, a daily application of a strong solution of protargol appears to do most good. In all severe cases a mouth wash of chlorine of potash solution, or a solution of listerine or glyco-thymoline, is indicated.

The condition described is so widespread in this country, and is a possible predisposing cause of so many maladies, that it is deserving of complete scientific investigation as to its etiology and prevention.

AN AID TO THE DIAGNOSIS OF POISONOUS SNAKES

By V B GREEN ARMYTAGE, M.B.,

CAPT., I.M.S.,

Rangoon

In these days when the medical officer, like a violin string, is always tuning himself up to New Regulations and the advances of Medical Science, it is not to be expected that everyone should be a snake specialist, or be able to carry in his memory all the technical minutiae of their differential diagnosis,—despite the fact that thousands of persons are annually bitten in India and Burma.

However, now that the hot weather and rains are approaching and snakes therefore becoming active again, it may not be without value if I may give some personal and practical experience of a table which I devolved for teaching my subordinates during three years' service in Bengal and Burma—out of that excellent and well-known book of Major Wall, I.M.S., on the poisonous snakes of India. For it can hardly be disputed how important it is, from a prognostic and treatment point of view for the medical officer or assistant-surgeon, to be able to give an authoritative opinion about a snake which has been killed after inflicting a bite. It may, however, be contended that the snake is rarely found, and if so, it is so battered as to be unrecognisable, but as a matter of fact, experience goes to prove that in the majority of bites or "finds" of snakes, natives bring in the animal on a stick either in triumph at its death, or for its identification by the hospital, or dispensary staff, and even though damaged it is generally possible to give an opinion upon it.

A large number of facts ably marshalled in book form is doubtless the perfection of learning in this subject, but as I have hinted, however willing the spirit, the flesh is weak to keep them in mind, so the accompanying table has been compiled with the idea of taxing the already heavy laden memory to the best extent compatible with a useful medical knowledge of the subject. For it will be seen that it is only necessary to master the few marked features of each group to be able to identify—

- (1) Whether a given snake is poisonous
- (2) What group it belongs to

Having satisfied oneself as to these two facts, it is unimportant from the doctor's point of view, namely, that of prognosis and treatment, to discover the exact species beyond those that are mentioned, though doubtless reference to Major Wall's book on the Natural History Society of Bombay would be made by those with any keenness or scientific bent. However, I would state for those that have small knowledge of the subject that, out of nearly 200 snakes brought in, 84 per cent. of those that

were poisonous, were those that are commonly met with, and those that are mentioned in the table under each group, and I would suggest for the sake of quick reference, after the few epitomised facts of each group have been grasped, that the table be kept framed on the hospital or dispensary office wall.

Finally, I would ask those who regard the subject of snakes as futile or impossible to be mindful of the words of our great master Hippocrates, who wrote "Prognosis in affliction is the secret of our art in medicine." I have to thank Major Wall for the use of his book and the help of his notes on many a difficult problem. The few remarks on treatment have been added merely as a general guide, though I am aware much discussion and variance of opinion is held on their relative use.

POISONOUS SNAKES THEIR EASY IDENTIFICATION

(AFTER MAJOR WALL, I.M.S.)

Definitions

SCALES covering head and body are called shields.

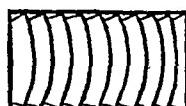
The more important shields are —

- (a) Supra labial, bordering upper lip
- (b) Infra labial, bordering lower lip
- (c) Nasal border nostrils
- (d) Inter nasal, between nostrils
- (e) Ventrals, cover belly
- (f) Vertebrales, down middle of back
- (g) Costals, cover sides

(h) Parietals, large and behind a line drawn between eyes

There are only four groups of poisonous land snakes in India and Burma and these groups have two common features, besides those mentioned below—

- (1) Tails round and not flattened
- (2) Ventrals of belly shields which stretch right across, or so far across that only part of the last costal row can be seen when the snake is laid on its back. *Vide diagram*

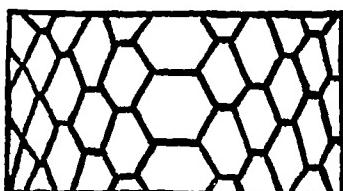


All poisonous sea snakes have flat tails

GROUP I

Comprises twelve species of Kraits characterised by —

- (1) Round tails



(2) Medium row of scales down back (Vertebrales) distinctly largest

(3) Iris black except in banded Krait which is yellow

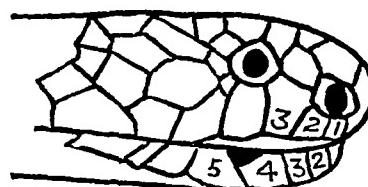
(4) Only four Infralabials and the 4th the largest. Commonly found are —

(1) Banded Krait or "Raj" Samp of Bengal. Banded yellow and black, grows about 6 feet virulent, but not often fatal to man

(2) Common Krait or "Chitti" of Bengal, has white indistinct banding, most marked posteriorly. Without immediate treatment rapidly fatal to man

GROUP II

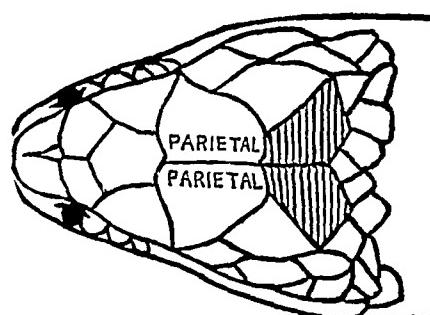
Comprises Cobras and Coral snakes, these both show (1) round tail, (2) the 3rd Supralabial touches the eye and nasal shields as in figure. In addition in the Cobra (1) between 4th and 5th Infralabials there is a small wedge called the "Cuneate" *Vide diagram*



(2) Do not be misled by seeing no hood, a dead stiff Cobra may show none. The Burmese variety shows on hood an oval mark surrounded by an ellipse. The Indian Cobra shows "spectacles" mark on hood

These Cobras rarely grow beyond 5 feet. Some Cobras have no hood marks

The Hamadryad or King Cobra grows to 15 feet and is distinguished from ordinary Cobras by having a pair of large shields in contact with one another behind the parietals. *Vide diagram*



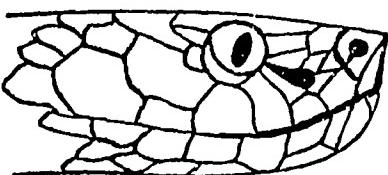
All varieties very virulent to man.

Coral snakes belong to this group, they have besides the two features mentioned above, usually coral pink or banded bellies. They are not fatal to man.

GROUP III

Comprises Pit Vipers only, that is, snakes characterised by —

- (1) Round tails
- (2) An easily seen opening on the side of the face between the eye and the nostril, called the Loreal opening. *Vide diagram.*



- (3) Found mostly in hilly districts
- (4) Do not grow beyond 3 to 4 feet long
- (5) Colour usually greenish, black or brown
- (6) Poison effects are severe, but usually only local, that is around bitten area

A common example of this group is the Green Viper or Bamboo snake

GROUP IV

Comprises Pitless Vipers characterised by —

- (1) Round tails
- (2) Snout and crown covered with small scales similar to those seen on back
- (3) Eye diameter greater than distance from eye to nostril. In this group two are commonly met with —

(1) The Little Indian Viper or 'Echis' known in Sind as "Kuppui," in Delhi as "Asai." It is very common and probably one-third of all bites fatal to man. This snake has a peculiar habit of double coiling itself, then inflating its belly, it rubs the coils together making a hissing noise. Its colour is a dark sandy brown.

(2) Russell's Viper, the "Mwe Bwe" of Burma, the "Jessui" of Bengal. It grows to 5 feet in length. Colour buff with three longitudinal series of spots down back, and on the head is a well seen pink V with apex at snout. Is very fatal to man.

GENERAL RULES FOR TREATMENT

Ligature or tournant above, make half inch deep, crucial incision and rub in crystals or solution of potas. permanganate.

Stimulants, hot black coffee, ether, strichnine, brandy, sal volatile.

Calcium chloride and adrenalin are useful for continued bleeding from wounds or gums

MODERN MIDWIFERY PRACTICE IN INDIA

BY G. T. BIRDWOOD, M.D.,

MAJOR, I.S.S.,

Civil Surgeon, Mussoorie

THIS paper is written with the hope that it will bring before practitioners in India one or

two recent advances in midwifery practice. By practitioners I do not mean only I.M.S. officers who have probably had time to attend a course at the Rotunda or elsewhere, but the large number of qualified and diplomaed Indian practitioners who attend confinements in native cities. It is also written with the hope that these advances may be impressed upon Indian students who are being educated at Indian schools. I also wish to advocate one or two measures, which may ensure medical subordinates attached to hospitals and dispensaries doing more thorough midwifery. Some years ago when I was a student, it was the custom during a confinement for a practitioner to make as many vaginal examinations as he thought fit to see how progress was going on. There was no disinfecting of the orifice of the vagina—the labia minora—no rubber gloves were used, douching before and after confinement was the practice. Few perineums were stitched. Craniotomy for contracted pelvis was the rule. By 1906 some advances had been made. The principle of practice as enunciated by Dr. Horrocks was to interfere as little as possible. The fewer vaginal examinations the better. The practitioner was not to follow down the uterus after labour. Not to use a binder, not to give chloroform, not to douche. In fact, to leave everything to Nature. Now in 1911 further steps have been made and the more important principles seem to be these—

(1) In normal labour no vaginal examination at all is advocated. The Master of the Rotunda says "We strongly recommend the management of normal labour without a vaginal examination."

(2) If a vaginal examination is necessary, boiled rubber gloves or a finger stall must be worn, also the labia minora must be disinfected by swabbing before examination by soap and water and then an antiseptic.

(3) Throughout the confinement rubber gloves must be worn and a second pair ready for intra-uterine use if subsequent necessity arises. At the Rotunda, by strict surgical cleanliness morbidity has been reduced from 8.7 per cent to 3.7 per cent in the last 5 years. (Morbidity is defined by a rise of temperature above 100° for any two days between the second and eighth day.)

(4) The diagnosis of foetal position and presentation must be done chiefly by abdominal palpation.

(5) The abandonment of douching after normal cases.

(6) The accurate measurement of the pelvis in the seventh or eighth month, so that in contracted pelvis treatment is decided on some weeks before labour commences. Dr. A. W. Russell of the Samaritan Hospital says "The proper moment to discuss contracted pelvis is long before labour sets in, until this is done we

shall have the almost unjustifiable operation of craniotomy." The Master of the Rotunda says "With the various excellent modern operations it is no longer justifiable to perforate a living child. We go further than this, and make the definite statement that a child should not be allowed to die through delay in delivery from contracted pelvis."

(7) The accurate internal measurement of contracted pelvis by Skutsch's pelvimeter.

(8) The introduction of Walcher's position by which the true conjugate is lengthened by $\frac{1}{2}$ inch.

(9) The introduction of pubiotomy, by which $\frac{1}{2}$ inch is also added to the true conjugate and the transverse diameter also widened.

(10) The stitching of the perineum in nearly all cases.

(11) The examination of the urine once or twice during the pregnancy, or more often if symptoms of toxæmia are present.

In fact, the key-note of modern midwifery is the prevention of complications which may arise from sepsis, abnormal positions, contracted pelvis, and toxæmia. Dr. A. W. Russell truly says "Prophylaxis is the central position of the art of obstetrics, and the ideal to which the true obstetrician must constantly strive." How far can this ideal be realized in India and how far can Indian students be taught to practise up to this standard?

(1) To begin with Can the Indian student be taught to use rubber gloves? And is the use of rubber gloves a practical possibility for Indian private practitioners? Objectors will at once say that finger-stalls and rubber gloves will not stand the Indian climate, and even if they did, the cost would be prohibitive for hospitals and private cases. These objections can both be overcome. For six months of the year rubber gloves will keep quite well, for the hotter months the necessary supply (calculated on the annual number of confinements) could be got in April to last over to October, when a fresh supply could be got for the colder months. Gloves keep well in the powder they are sent in, or in methylated spirits or suspended in the kerosene oil vapour. As regards cost, finger-stalls can be purchased at Rs. 12 a dozen, and gloves at Rs. 2.6 a pair. A pair of gloves, if properly treated, can be used for 4 or 5 cases. For Rs. 100 about 250 midwifery cases could be attended with gloves. Up-country hospitals do not probably have more than this number of confinements in the year. In hospital practice and also in teaching students and nurses, I am strongly of the opinion that no vaginal examination should be permitted without a finger-stall. The fingers of partially damaged gloves can readily be used for finger-stalls subsequently. They can be boiled and kept in a bowl of methylated spirits for the use of students. If the Rotunda can afford finger-stalls and gloves for 1,800 cases annually, surely Indian Maternity hospitals, with the wealth of India at their back, can afford these

articles for the 200 to 300 cases which occur in a hospital. For private cases the practitioner should supply his own gloves. If a female sub-assistant-surgeon attends a rich native lady, she should insist that the patient pays for the gloves or the fee be large enough to enable her to purchase them. I am strongly of the opinion that every student should be taught that he or she must use finger-stalls or gloves in midwifery practice after leaving the hospital, and that every Dufferin and Maternity hospital should keep a supply of gloves for hospital use and for the use of the staff when they attend cases in the city and that the officers in charge of these institutions should see that the gloves are fit for use and that they are used. Is it fair on a Maternity case that a female sub-assistant-surgeon who has been opening a septic abscess or dressing syphilitic sores at out-patients should go off to the city and attend a confinement with recently septic hands with perhaps only a brief preliminary dipping of the hands in lotion?

(2) Again, I do not think students in India are definitely taught the disinfecting of the labia minora. The Master of the Rotunda devotes a whole page on the preparation of the vaginal examination. It will be a step in advance if Indian students are taught that this is one of the essential points in the conduct of a case. Whitridge Williams has shown after an examination of 300 women that the vagina in healthy women is sterile. The Indian student must be taught that he must not carry germs from the labia minora into the vagina.

(3) Again, midwifery books lay down that a definite obstetrical kit should be taken in a bag to a case. Tweedy and Wiench devote a whole chapter to this subject. How many Maternity hospitals in India who send women out to treat patients in the city keep a properly equipped bag? How many practitioners who attend city cases keep a proper outfit themselves? Such a bag is bought and equipped at a small expense. I do not know any Maternity or Dufferin hospital or any female sub-assistant-surgeon who keep such a bag. The essential contents are—(a) for ordinary cases, finger-stalls or rubber gloves, nail brush, bimodide tabloids or lysol, a piece of soap, a packet of Salalembioth wool, ergot, waterproof sheet, douche can, canula, scissoids, catheter and needles and forceps, a small Etna spirit lamp, or sterilizer, (b) for those who wish to meet further emergencies the bag can contain uterine plugging forceps, iodoform gauze, flushing cuvette transfusion apparatus, axis traction forceps and Carlton's mucous catheter and pelvimeter. How many Indian students who are now in practice have been taught that the equipment mentioned in (a) is absolutely necessary for the proper management of cases in practice. Every Maternity hospital in India should undoubtedly keep such a well equipped

bag and every student should be taught that he cannot conduct cases without these necessities

(4) Again, is it possible to teach Indian students to diagnose foetal positions by abdominal palpation? Is this done now? Diagnosis by abdominal palpation is not always easy especially in a fat subject, but much may be done by making it one of the principal points of a student's training. It is not difficult to find out whether the breech or the head is at the fundus and whether the foetal back is looking forwards or backwards. The Pawlik grip will tell whether the head is fixed in the bum or not. In my opinion this method of diagnosis should be one of the principal things taught to a student in his course of training.

(5) Is it possible to teach Indian students to measure the pelvis accurately? Is this done now? The pelvimeter at present is generally produced to measure an obvious contracted pelvis which could be diagnosed by sight or the hand. Skutsch's pelvimeter is invaluable for accurate internal measurements, but I should not recommend it for the general instructions of students. Its flexibility makes it more difficult to use accurately and for internal measurements, when it is really needed, chloroform is necessary. It is not the very obviously contracted pelvis which need measurement by the practitioner so much as those with a bum from 3 to $3\frac{1}{2}$ inch which escape detection till labour is well advanced. It may be said that most Indian women who have contracted pelvis do not come to the dispensary or seek skilled assistance till labour is far advanced. This is often the case, but it is not always so. Cæsarean section has been many times done at Agia by others and myself on women who have reported themselves some weeks before confinement. The student should be taught the advantages of prematurity labour, Walcher's position and pubisotomy for the treatment of contracted pelvis. Then, with an accurate training in pelvimetry, they would be able to send to skilled assistance such cases as needed it.

I constantly see certificates to the effect that the holder has studied midwifery for two years and attended 50 cases. It would be better if the certificates definitely stated that the holder had diagnosed the foetal position by palpation in 50 cases, had accurately measured 50 pelvises, and had examined 50 cases with rubber gloves.

(6) I further think it would advance the cause of good midwifery practice among Indian students and nurses in India, if a short leaflet was written for each on the management of normal labour, so that essential points should not be forgotten in practice in future years. The following points should be briefly dealt with—

How to prepare the bed

How to prepare lotion and basins

How to prepare rubber gloves for use

How to disinfect the labia minora

What to have ready at the second stage

How to conduct the second stage

How to conduct the third stage

What to do in cases of haemorrhage

How to revive the infant

The leaflet for nurses would differ considerably and would vary with the practice and wishes of the physician conducting the case.

I have drawn up a leaflet for the direction of nurses working under me, stating exactly what preparation and procedure I wish carried out. It is based on one given me by the Civil Surgeon of Naini Tal, and I hope to find it of the greatest use.

CONCLUSION

The summary of what I advocate in this paper is—

(1) That Indian students should be taught the necessity for the use of rubber finger-stalls and rubber gloves in confinements.

(2) That every Maternity and Dufferin hospital should keep a stock of rubber gloves for hospital use, and the use of those who attend cases in the city.

(3) That no practitioner should attend a case without using boiled gloves or finger-stalls.

(4) That no vaginal examination is necessary in normal cases.

(5) The students should be taught that the disinfection of the labia minora is an essential point in practice. If a vaginal examination is to be made, a boiled finger-stall must be used and the labia minora disinfected.

(6) That every Maternity and Dufferin hospital should keep a properly equipped obstetrical bag for the use of the staff attending cases in the city. This should contain at least antiseptics, pelvimeter, gloves, waterproof sheet, and douche can and antiseptic wool.

(7) Every student must be taught that if he or she goes into midwifery practice, he or she must keep a proper obstetrical kit.

(8) Every student should be taught the necessity of diagnosis, the foetal position by abdominal palpation in all cases.

(9) Every student should be taught to make accurate pelvic measurements in all cases, and in after practice, if necessary, call in skilled assistance early.

(10) That a leaflet for the management of normal cases would be a help to Indian practitioners in remembering essential points.

(11) That a leaflet of 'instructions to nurses' would be a help to nurse and doctor in attending a case.

These points which I advocate are not counsels of perfection or beyond the range of practical application, but are possibilities which can be and should be realized, improvement can only be effected by insistence and thorough teaching of the rising generation at Maternity and Dufferin hospitals. I believe most of these

points are not taught or practised at present. The population of India is over 300 millions and the number of births annually enormous. The number of European practitioners in India (not in military employment) is probably not much over 1,000. Therefore the midwifery practice of India now and in the future must necessarily be almost entirely in the hands of Indian practitioners. This emphasizes the importance of the fact that the teaching of our schools must be thorough and that it should strive towards the ideal.

A Mirror of Hospital Practice

WOUNDS INFILCTED BY TIGERS, PANTHERS AND BEARS

BY F H GLEESON, M.B.C.P. & S. (Irel.),
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SAMBAIPUR is a district in which shepherds, cultivators and shikaris are not infrequently mauled by tigers, panthers, and bears. These people when thus attacked invariably come to hospital for treatment as they are always aware of the seriousness of their wounds.

The principal symptoms associated with these wounds are shock, great pain, torpor, and thirst. The main physical signs are inflammation (which may go on to cellulitis or gangrene) and pyrexia.

The amount of shock depends on the severity of the wounds, but even in slight cases it is comparatively great. It is more in the European than the native. The latter is generally a man of phlegmatic temperament and hence less liable to shock. Soon after a mauling the patient becomes giddy and looks ghastly pale and cannot stand. The reaction sets in early and his temperature rises to 101 or 102 or more.

As regards pain it is remarkable how even a small scratch from a tiger or panther's claws will cause the wound to burn and throb. This sensation of pain is quite in keeping with the appearance of the wound. The smallest superficial scratch becomes rapidly surrounded by an area of inflammation which persists for a considerable time.

Torpor is always present in cases mauled or bitten by tigers and panthers. The patient is apathetic and drowsy. Even while his wounds are being dressed he dozes. There may be delirium at times. He sleeps for the most part all day and all night. This condition is due to septic absorption, and until such time as all the poison has been eliminated, torpor will be present in greater or less degree.

Thirst is a constant symptom. The mouth and throat feel dry and parched. The patient drinks glass after glass of cold water. This should be encouraged as it helps to eliminate the poison from the system.

If the wound is only superficial the inflammation has a tendency to be superficial, but if the wound has penetrated below the true skin, cellulitis almost always results. The affected arm or leg or other part that has been bitten or mauled soon becomes bluish-red, swollen, oedematous, and hot. It is firm to the touch and painful on pressure. Sometimes cellulitis begins to make itself evident almost immediately after the infliction of a wound. Sometimes it does not appear for some days till after the injury. I have often evacuated pus from the vicinity of a wound a week or ten days after the occurrence of a maul or bite. Sinuses often form after the wounds have become healthy, and are the cause of a slight rise in temperature of intermittent type.

The inflammation and cellulitis are explained by the poisonous nature of the wounds. Indeed, in cases that are very severe one has to be on the look-out for acute infective gangrene. Even in favourable cases, i.e., those in which the wounds are more or less superficial, there is considerable excretion from them. If in poisoned wounds of this nature cellulitis is allowed to increase, the inevitable result will be either moist gangrene or deep and extensive sloughing on the tissues.

Bear-bites and mauls are much less poisonous than those of tigers and panthers. This is attributed to the fact that the latter are carnivorous, whereas bears are herbivorous. In any case, mauled or bitten by a bear, one is nearly always justified in giving a good prognosis provided no vital organs are injured. I treated a case last year in which a man had literally been scalped by a bear, and yet recovered and went home.

Europeans are more susceptible than natives to the toxins that are introduced into the system by injuries received from these animals. It is, I think, a moot point as to whether a bite or a scratch is more poisonous. Some seem to think that the claws cause the worst wounds. I am inclined to the opinion that both are of equal virulence. Occasionally one sees a claw-mark which has caused very little inflammation side by side with a tooth-mark which has caused a much greater degree of mischief. If such wounds are examined closely, it will probably be found that one is more superficial than the other, and hence the difference in the degree of inflammation which followed.

The rise of temperature that accompanied the reaction after shock, continues. The chart may be of a continuous or intermittent type—more often the latter. The fever lasts—according to the severity of the case—from ten to twenty days, and is due to septic absorption from the poisoned wounds. If sinuses form, they cause additional fever of a low intermittent type. There is nothing to be feared from this pyrexia, provided the wounds are kept quite aseptic.

and all inflammatory products are freely evacuated.

Treatment—Shock should be treated if present. The wounds should be thoroughly syringed and cleaned with Iodine Lotion and dusted with Iodoform, all tags of slough and unhealthy tissue should be snipped off with the scissos. The most important point in treating these wounds is to make early and free incisions wherever there is any sign or suspicion of cellulitis. All sinuses should be opened and scraped. It is necessary to dress all these cases twice daily, so as not to allow noxious material to accumulate. Hot Boile compresses help to reduce superficial inflammation, but should not be depended on for deep inflammation. Massage hot douching must be used to prevent joints from getting stiff. The only treatment for gangrene is immediate amputation. Plenty of water should be given to drink. The diet should consist of milk, cereals, light broth, biscuits if asked for, etc.

NATIVE GUN POWDER INJURIES OF THE EYE

BY R H ELLIOT, M.D. (London), F.R.C.S. (Eng.), etc.,
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IN the closing months of each year a number of cases of so called "gun-powder injury" to the eyes are met with in the South of India. These accidents occur mostly at the time of the feasts of Deepavali (Divali) and Kartik which are commonly spoken of as "cracker feasts." The appearance of an injured eye is most characteristic; it looks as if a number of fine grains of red pepper had been imbedded deep in the cornea and conjunctiva, the eyelids and the surrounding skin of the face are similarly studded with the fine red granules. On removing one of these, it is found to consist of red sulphide of arsenic (realgar).

Preparation of the Explosive—It is illegal to prepare explosives in private houses, but this is nevertheless extensively done. The explosives in common use are of two kinds. In the more dangerous form, red sulphide of arsenic (realgar) and chlorate of potash are mixed in equal proportions by gentle digital manipulation. To this mixture some coarse gravel is added, and the whole is very gently and slowly enclosed in paper, it is next wrapped round with cloth, and tied securely. If the "cracker" so made is thrown on the ground or against a wall, it explodes with great violence and with a loud report. If the mixture of the chemicals is made at all roughly, an explosion will take place, but it is after the addition of the small stones or gravel that the risks assume really serious proportions. From what one gathers, accidents are not common in the

licensed factories, it is the amateur firework maker who suffers most frequently. Many of these are fathers of families who from motives of economy break the law on the quiet to provide amusement for their children. The accidents are apparently most common whilst the men (I have never seen a case in a woman) are leaning over intently watching the explosive mixture which they are making. This explains why the eyes suffer so often and so severely. A much less dangerous mixture is made of two parts of chlorate of potash to one part of sublimed sulphur. This is carried about by boys and a pinch of it is hammered between two stones or between a hammer and a stone, an explosion results, but, so far as I am aware, no serious results follow.

Distinctive clinical features—The first impression on examining one of these cases of gunpowder injury is that the red grains lie quite superficial and should be capable of easy removal. This impression is not confirmed by experience. Very rarely can the particles be picked out with a needle or spud, on the contrary, they are found to be imbedded in, and adherent to, the tissues, and their extraction is often only possible at the expense of extensive damage to the surrounding cornea, indeed, nothing less than excision of the part will suffice in many cases. Very soon a condition of considerable chemical irritation of the cornea is set up, and marked circum-corneal injection is found to be present. Late still, chronic uido cyclitis sets in with all its attendant evils, not infrequently culminating in loss of vision and even of the eye. There would appear to be no doubt that all this irritation and inflammation is due to the absorption of the irritating chemical salt, and to its action on the tissues it traverses. Such absorption is very slow and the inflammation is therefore very protracted. In raro cases one sees the grains of realgar driven right through the cornea and imbedded in the lens and iris, in such the signs of localisedritis and of traumatic cataract soon make themselves manifest. In one case which was treated at the Government Ophthalmic Hospital, Madras, a small rupture of the cornea had taken place close to the limbus, presumably this was due to the force of the explosion. Such a complication is very rare indeed.

Prognosis and Treatment—There is little to be done. When the granules are few and large, they may be laboriously dissected out at repeated sittings. Atropine and counter-irritants are used on ordinary lines, but except in the cases where the original damage is small, the prospect of affording real relief is poor.

Prophylaxis—Something may be done by an endeavour to disseminate amongst the people a knowledge of the dangers arising from this crude highly explosive, and chemically irritating form of firework.

Indian Medical Gazette

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THE MEDICO LEGAL VALUE OF THE BIO CHEMICAL TEST FOR BLOOD STAINS

THE problem of proving whether a given blood stain is of human origin or not is one which has long occupied scientific workers. During the past century tests based on the odour of an extract, the size of the blood or corpuscles and the microscopical characters of haemoglobin crystals obtained from the stain, were all put forward as solutions of the difficulty, but were found unreliable in practice. It was only when the recently discovered bio-chemical tests were made use of in 1900 that the problem was solved by Uhlenhuth, and independently by Wasserman and Schultze by means of the precipitin test. Briefly, this method is based on the fact that if the blood of one animal, A, is repeatedly injected into another animal, B, then the highly diluted blood serum of B will form a white cloudy precipitate on being added to a minute amount of the blood serum of A, but not when added to that of any other animal. If the dilutions are not so great, then less marked precipitates may be obtained with the blood of animals closely related in the zoological scale only, and Nuttall has recorded a very extensive piece of work on these lines. In applying this principle to examinations of human blood stains, a suitable animal, such as a rabbit or a fowl, is repeatedly injected with human blood serum until its own serum is found to produce a precipitate within twenty minutes with at least a thousand-fold dilution of the blood to be examined. With these limits only the extract of a human blood stain will give a precipitate, while the blood of no other animal, not even the closely related anthropoid apes, will do so. Such a reaction is thus an absolute proof of the blood stain being of human origin. As even a blood stain many years old will give an extract of blood serum on suitable treatment, and the degree of dilution of such an albuminous solution can readily be estimated by the character and duration of the floth obtained by shaking it, there is no difficulty in applying the test to any specimen of dried blood. Not only can it be ascertained by this method that a given stain is or is not human blood, but by injecting separate rabbits with the

blood of the common domestic animals, serum can be obtained which will furnish a reliable indication of the presence of the blood of the particular animal from which it is alleged that a stain has been derived. In this way the truth of a statement made in the defence of a prisoner under trial can be tested. The immense value of such information needs no demonstrating in such a country as India, where the ingenuity of advocates for the defence knows no bounds.

This precipitin test has now been used for a number of years in medico-legal practice in all civilised countries within temperate climates, but it remained to be ascertained if it was feasible in the tropics. For the purpose of settling this important point Lt-Colonel W D Sutherland, M.S., who had devoted much study to the question in continental laboratories and published a monograph on it, was placed on special duty in Calcutta two years ago. A most interesting account of his researches has just appeared in the Scientific Memoirs of the Medical and Sanitary departments, No. 39, which finally disposes of all difficulties, which were numerous. The essentials are a freezing chamber, which has now been provided in the physiological laboratory of the Calcutta Medical College, and an ample supply of human blood, also obtainable from placentas in the hospital. Lt-Colonel Sutherland found a larger proportion of animals unsuitable for furnishing an active serum in Calcutta than in Europe, but with perseverance success crowned his efforts. He also prepared serums which reacted with the blood of a number of the commoner domestic animals. His report includes a most instructive table of 31 tests carried out with blood stains supplied to him by various Medical men, the nature of which he was unacquainted with at the time he tested them. In every case he was correct in his report as to whether they were human or not, while in many he was further able to say what class of animals the blood was derived from, thus leaving no doubt as to the applicability of the new test in the tropics. A careful study of this report also makes it clear that the test must be carried out by an expert such as Lt-Colonel Sutherland, for human lives will depend on it, and extreme accuracy and careful controls for every step in the operations is essential to success. Moreover, although in the individual experience of a single judicial officer the number of cases which the

accuate identification of a blood stain in a medico-legal case as human or not may be small, yet as the expert who must be appointed to carry out the work in India will be called on to examine stains from all parts of this vast empire, there will be no lack of work for him. It is only to be hoped that he may have some leisure left for carrying out further researches, and perhaps also Wasserman's test for syphilis, the demand for facilities for which has become very urgent in India now that Ehrlich's new remedy is on the market.

The Government of India acted wisely in ordering an expert investigation before introducing the precipitin test in the tropics, but now that its feasibility has been authoritatively settled, they will doubtless delay no longer in a matter in which they are still behind such small and poor countries as Spain, Bulgaria, Egypt and even Cuba. After all the annual salary of the necessary expert will only amount to about the sum spent in a week or two on legal counsel in single important political cases, which cannot be weighed against the necessity of vindicating the majesty of the law and removing the reproach of India lagging so far behind the States just mentioned. With the present exceptionally satisfactory state of the finances, we trust this reproach will soon be removed. Finally, we may remind our readers that Lt-Colonel Sutherland demonstrated the test before the Medical Society in August 1909, when the following resolution was passed unanimously "The Medical Section of the Asiatic Society of Bengal, having witnessed Major Sutherland's demonstration of the precipitin test for human blood, is of the opinion that it is a practical test when conducted by an expert, and can give valuable assistance in medico-legal practice. They consider that the time has come for making the test available in medico-legal work in India."

of para 5 which will save trouble if attended to.

The matter of study leave has been largely mixed up with that of accelerated promotion. We are not particularly in favour of the system of accelerated promotion, but undoubtedly the new rules whereby a junior officer can qualify for and become eligible to be selected for accelerated promotion is a great advantage for which the service is indebted to the Director-General. Hitherto it not infrequently happened that for various reasons an officer was not able to take leave in the three or four years before his promotion to Major was due, and was consequently unable to take the special courses or diplomas, etc., which would have rendered him eligible. Thus, for no fault of his own, such an officer might find himself superseded by men originally below him on the list. The new regulations permit such an officer to qualify or become eligible at any period for four years after the due date of his promotion to a majority. This is very liberal and the man who cannot take leave and qualify before the end of his 16th year of service must be rare indeed.

There is another matter in connection with his matter of study leave which is well worth the consideration of the Government of India. It is the difficulty of getting ordinary leave home after 3, 4 or 5 years service since last furlough. Owing to privilege leave, study leave and furlough being now taken usually all together men and especially the younger men take long spells of leave for 18, 20 or 24 months. The result is that the turn for leave does not come round as quickly as in the former days when a majority of men were content with 8 or 10 months' leave, or more rarely 18 months so as 'to escape two hot weather'. The result is that administrative officers find themselves confronted with applications from men with 5 or 6 years' continuous service since last leave and they cannot grant this leave because the permitted number of men are already on leave and are not returning as quickly to duty as in the days before 'study leave' was introduced.

Study leave has been a great boon to the service, it is for the benefit of the public and the State that men in responsible positions should qualify themselves and become well acquainted with the latest developments of medical science, but the fact remains that it retards leave and

STUDY LEAVE, ACCELERATED PROMOTION AND ORDINARY LEAVE

We are glad to see that the rules for the grant of study leave have been republished in full in the *Gazette of India* (January 14th, 1911). It is of the utmost value to intending candidates for this most useful form of leave to have all the rules reprinted together in one order.

There is not much new in the present rules but we would call attention to the last portion

this should, we hold, be met with by an increase in the total number admitted to leave of absence at any one period, or by counting men while on "study leave" on a different roster from men on the ordinary leave, which is so necessary to health and good work in this climate.

The new study leave rules are now as follows —

"No 31 — In supersession of the rules contained in Army Department Notification No 25, dated the 7th January 1910, the following regulations for the grant of study leave to officers of the Indian Medical Service are published for information —

REGULATIONS REGARDING THE GRANT OF STUDY LEAVE TO OFFICERS OF THE INDIAN MEDICAL SERVICE

1 Extra furlough for the purpose of study may be granted to officers of the Indian Medical Service on the recommendation of the Director General, Indian Medical Service.

2 The period of such Study Leave will be calculated in the case of an officer under Military Leave Rules at the rate of one month for each year of pension service, and in the case of an officer under Civil Leave Rules at the rate of one month for each year of active service, as defined in the Civil Service Regulations, up to a total in either case of 12 months in all during an officer's service.

3 Study Leave may be taken at any time, but will not be granted more than twice in the course of an officer's service. This restriction does not apply to an officer who has part of his furlough converted into Study Leave under Rule 8.

4 The minimum period of study which will render an officer eligible for Study Leave shall be two months.

5 The minimum period of leave granted solely as Study Leave shall be six months. Time spent on the journey to and from India by an officer whose Study Leave is not combined with any other kind of leave will reckon as Study Leave, but the allowance specified in Rule 10 will be granted during the period of study only. An officer whose Study Leave is combined with any other kind of leave will, however, be required to take his period of Study Leave at such a time as to retain, at its conclusion, a balance of other previously sanctioned leave sufficient to cover his return journey to India.

When an officer has been granted a definite period of Study Leave and finds after arrival in England that his course of study will fall short of the sanctioned period to any considerable extent, his absence from India will be reduced by the excess period of Study Leave unless he produces the assent of the authorities in India to his taking it as ordinary furlough.

6 Study Leave can be combined with any other kind of leave, provided the period occupied in study is not less than two months and, in the case of leave on medical certificate, provided that the Medical Board at the India Office certifies that the officer is fit for study. In the case, however, of officers in military employment, Study Leave cannot be taken in continuation of the combined privilege leave and furlough admissible under the terms of India Army Order No. 64 of 1904,

if the total period would thereby exceed eight months, but Study Leave may be so taken provided such leave is for not less than two months and the total period of combined privilege leave, furlough and Study Leave does not exceed eight months, this limitation to eight months does not, however, apply in the case of Study Leave combined with privilege leave alone. The total period of absence from duty in India, in the case of officers under the Leave Rules of 1896 for the Indian Army, will be strictly limited to two years.

7 Except as provided in Rule 8, all applications for Study Leave shall be submitted, with the audit officer's certificate, to the Director General, Indian Medical Service, through the prescribed channel, and the course or courses of study contemplated and any examination the candidate proposes to undergo shall be clearly specified therein.

8 Officers on furlough who wish to have part of their furlough converted into Study Leave should address the Under Secretary of State, India Office, and should furnish a statement showing how it is proposed to spend the Study Leave. Similarly, officers on furlough or other leave who desire to have it extended for purposes of study should address the Under Secretary of State, but in addition to the statement of the proposed study, they must support their applications with documentary evidence of their having obtained the approval of the authorities concerned in India to their applying for an extension of leave.

9 An officer who is at home on combined leave may be permitted to commence a course of study before the end of his privilege leave, and to count the period so spent as part of his Study Leave, without forfeiting his privilege leave allowances during such period.

10 For the course of study, lodging allowance at the rate of 6s a day for a Field Officer, 6s for a Captain and 4s for a Lieutenant, will be granted on the production of the certificates required by rule 12. It is to be understood that in order to qualify for the grant of Study Leave or for the receipt of lodging allowance, a definite course of study at a recognised institution, which will occupy the time of the officer for five or six days a week, must be pursued. This allowance will not be admissible to an officer who retires from the service without returning to duty in India after a period of Study Leave. Lodging allowance will be admissible up to 14 days for any period of vacation.

11 The rate of pay admissible during Study Leave to an officer under Civil Rules is determined as follows —

A If the rate of pay admissible during furlough earned by service under Civil Rules is higher in his case than that admissible during furlough earned by service under Military Rules, then —

(1) He draws pay at the former rate for such period of his Study Leave as has been earned by his service under Civil Rules, and —

(2) for the remainder, if any, he can elect either —

(a) to draw pay at the rate admissible during furlough earned by service under Military Rules, or —

(b) to draw it at the rate admissible during furlough earned by service under Civil Rules for a period not exceeding the amount of such furlough at his credit.

In this case an equal period of the furlough at his credit earned by service under Civil Rules will be treated as if it had been earned by service under Military Rules.

B If the rate of pay admissible during furlough earned by service under Military Rules is higher in his case than that admissible in respect of service under Civil Rules, then—

(1) He draws pay at the former rate for such portion of his Study Leave as has been earned by his service under Military Rules, and—

(2) for the remainder, if any, he can elect either—

(a) to draw pay at the rate admissible during furlough earned by service under Civil Rules, or—

(b) to draw it at the rate admissible during furlough earned by service under Military Rules for a period not exceeding the amount of such furlough at his credit. In this case an equivalent period of the furlough at his credit earned by service under Military Rules will be treated as if it had been earned by service under Civil Rules.

12 On completion of a course of study a certificate on the proper form (which may be obtained from the India Office) together with any certificates of special study should be forwarded to the Under Secretary of State, India Office, who will arrange for the transmission of copies of the documents to the Director General, Indian Medical Service. Officers may also be called upon to report themselves in person to the President of the Medical Board, India Office, on the conclusion of their course of study.

13 Study Leave will count as service for promotion and pension, but, except so far as it may be taken during privilege leave (see Rule 9), it will not count for furlough or any other leave. It will not affect any leave which may already be due to an officer, and will not be taken into account in reckoning the aggregate amount of furlough taken by an officer towards the maximum period of six years admissible under Article 299 of the Civil Service Regulations."

MILITARY DEPARTMENT,
India Office, October 1910.

Current Topics

THE FEE INTERFERENCE QUESTION ENDED

We direct attention to the following Notification of the Government of India which appeared in the *Gazette of India*, and is dated the 2nd February 1911.

"No 100—In supersession of the orders contained in the Home Department Notification No 607, dated the 1st July 1909, and of all existing orders on the subject, the Governor-General in Council is pleased to make the following rules, which will be applicable to British India and Native States, regarding the receipt by medical officers of Government of fees (including honoraria or presents which may

be offered for services rendered) for professional services in certain cases—

(1) Whenever attendance, whether for an ordinary visit, a consultation, a confinement, or a surgical operation, on a Ruling Chief or his family or dependents, or on an Indian of position who holds a hereditary title conferred or recognized by Government of rank not below that of Raja or Nawab, or his family or dependents, involves the absence of a medical officer from his station, he shall be permitted to demand or receive such fees as may be arranged between himself and the person employing him, provided that he does not, without the special permission of the local Government, obtained as provided below, demand or receive, in addition to his travelling expenses, a higher fee than Rs 500 a day for the first three days and Rs 250 a day thereafter, the full daily fee being given for every complete period of 24 hours' absence, with a proportionate fee for periods of less than 24 hours.

(2) For similar attendance not involving absence from his head-quarters, a medical officer may demand or receive fees in accordance with the scale which he has fixed for his patients generally, and, in the case of operations and confinements, he may accept fees equal in amount to those current in similar circumstances in the profession in the United Kingdom.

(3) Before accepting or demanding from a Ruling Chief or Indians of position, as referred to in rule (1), a fee in excess of the rates laid down in rules (1) and (2) above, a medical officer must report the case confidentially to the local administrative medical officer, who will obtain unofficially, and communicate to him, the orders of the local Government. When taking the orders of Government, the administrative medical officer will be careful not to disclose any of the medical particulars of the case.

(4) Local Governments and Administrations shall have full power to dispose of all cases so reported to them, but shall be at liberty to consult the Director-General, Indian Medical Service, or to refer any particular case for the orders of the Government of India."

The service will be glad to receive this notification. It removes what has always been felt to be a slur on the service and we are all grateful to the Director-General for having effected this much-needed change and for the settlement of a thorny question, which has always been a ground for resentment by the service and by the profession at home which has strongly supported us in this matter.

THE SANITARY SERVICES IN WAR

The following important army order is published in India Army Orders, dated 12th December 1910, on the organisation of the sanitary

services in war as a supplement to the medical aid provided —

"The sanitary service of the army in war will be provided for by the following organizations —

- (a) Regimental sanitary detachments with each field unit
 - (b) Sanitary sections, for service at the base and on lines of communications

2 Regimental sanitary detachments of units are already organised for peace duties—India Army order No 354 of 1907,—and for war their personnel will remain unchanged, viz.—

	Non Commissioned Officers	Privates
Regiment of Cavalry	1	1 per squadron
Battalion of Infantry	1	1 per company
Other units	1	1 per unit

Each detachment will be under the orders of the Medical Officer in charge of the unit or of the medical subordinate in units without a medical officer. Its duties in war will be —

- (a) Supervision of water supplies, including their protection, purification and distribution Apparatus and chemicals required for these purposes will be in charge of each detachment
 - (b) Supervision of food supplies, cooking and slaughter places of their units and disposal of waste water and refuse
 - (c) Disinfection
 - (d) Supervision of the ablution places of their units and disposal of waste water
 - (e) Conservancy, refuse disposal, and cleanliness of their camps, including that of animals' lines
 - (f) Acting as sanitary police

During an action the regimental sanitary detachment will assist the stretcher bearers of the unit in the removal of the wounded and dead

3 Sanitary sections have no permanent organisation in peace. In war the personnel and organisation of a sanitary section will be as follows —

	Non Commissioned Officers	Privates	NATIVE ESTABLISHMENT		
			Sweeper	Bildus	Bhisties
British	2	8	60	10	5
Indian	2	12			
Total	4	20	60	10	5

Each section will be divisible into squads as may be required. It will be commanded by a medical officer, but in certain circumstances such as employment at the base of operations two or more sections may be commanded by one medical officer.

4 Divisions and Independent Brigades will furnish sanitary sections as follows —

Northern Army—

- | | | | | |
|-------------------|----------|------------|----------|----------|
| 1st (Peshawar) | Division | 3 sections | numbered | 1 to 3 |
| 2nd (Rawal Pindi) | " | 4 | " | 4 to 7 |
| 3rd (Lahore) | " | 4 | " | 8 to 11 |
| 7th (Meerut) | " | 5 | " | 12 to 16 |
| 8th (Lucknow) | " | 5 | " | 17 to 21 |
| Kohat Brigade | " | 1 | " | 22 |
| Bannu Brigade | " | 1 | " | 23 |
| Derajat Brigade | " | 1 | " | 24 |

Southern Army —

4th (Quetta) Division	3 sections	numbered	25 to 27
5th (Mhow)	4	"	28 to 31
6th (Poona)	5	"	32 to 36
9th (Secunderabad)			
Division	5	"	37 to 41
Burma	3	"	42 to 44
Aden Brigade	1	"	45

5 The personnel of these sections will be taken from the non commissioned officers and men of infantry units who have been trained in sanitation, vide Army Regulations, India, Volume II, paragraph 893, as amended by Appendix 2, India Army Order of January 1910. Under the orders of General Officers Commanding Divisions all units will be informed of the number of non commissioned officers and men they will be required to furnish on mobilisation, and the section to which they will be posted. The sections to be formed in the 3 Independent Frontier Brigades will be composed of Indian troops only. Commanding Officers are responsible that the requisite number of trained men are always forthcoming. Any further practical training of the sections which may be necessary will be arranged by General Officers Commanding Divisions. The personnel of sanitary sections should be brought together and exercised during manoeuvres, and a medical officer or officers appointed to command them.

6 The duties of sanitary sections in war are as follows —

- (a) Supervision of water supplies, including their protection, purification and distribution. Apparatus and chemicals required for these purposes will be in charge of each section.
 - (b) Supervision of food supplies, cooking and slaughter places, and disposal of waste water and refuse.
 - (c) Disinfection.
 - (d) Supervision of pollution places and disposal of waste water.
 - (e) Conservancy, refuse disposal and camp cleanliness, including that of animals' lines.
 - (f) Sanitation of camps of hired transport, camp bazaars, railway stations, camps and sites for troops passing through.
 - (g) Sanitation of routes between camps or posts, and the disposal of carcasses, etc.
 - (h) Carrying out sanitary schemes which are beyond the power of regimental sanitary detachments.
 - (i) Acting as sanitary police.

7 On mobilisation being ordered or before this if necessary, general officers commanding divisions will be informed of the number of sanitary sections to be furnished, the destination of each and the required date of its arrival there. On receipt of these orders the requisite native establishment for each section will be entertained—preliminary arrangements for this having been already made by General Officers Commanding Divisions—and the sections formed, equipped and despatched under their own medical officers. On arrival at destinations the sections will at once assume such sanitary duties as may be ordered and will receive any necessary transport.

It is of the utmost importance that sanitary sections should have everything in readiness before main bodies of troops, etc., arrive at the several camps and they should therefore invariably proceed with the most advanced troops."

THE DANGER OF USING BOILED MILK *

This is the publication of an address delivered by Dr Ralph Vincent in Glasgow in November last on what is vaguely called the epidemic diarrhoea of infants

"Acute Intestinal Toxæmia of Infants By Ralph Vincent,
M.D., London Bullière, Tindall and Cox, 1911

It is well worth reproducing in book form, for it is an address which we can strongly recommend to our readers, especially to those who have either infants as patients or are interested in reducing the terribly high infant mortalities shown in the vital statistics of every town in India.

This "most fatal disease of infants" has not benefited by the great progress in sanitation in England of recent years—in fact, according to Newman, the disease is steadily increasing as a factor in infant mortality. It is most prevalent in the third quarter of the year and especially affects the children of the labouring classes—due probably to neglect of infants due to the industrial occupation of the mothers and to uncleanly storage of food—especially milk. At a time when the disease is sweeping through a town destroying hundreds of infants per month, the babies which escape even when living amid the most insanitary conditions are the breast-fed babies. Pure raw milk is what is needed, for Dr Vincent shows us in this book by elaborate experiments that the characteristic properties which make milk the natural food for infants are destroyed by heat and therefore pasteurisation and sterilisation of milk is not only useless, but positively harmful.

It is better to risk the danger of 'germs' in the milk than to make it useless as a food by heating it

"The dinner the milk the more important it is that it should not be cooked. Boiling the milk utterly destroys the balance provided by Nature. Milk that has been boiled is not milk. Fresh raw milk is the fundamental requirement of the infant. It is essential to its peculiar digestive and nutritive requirements. The milk must be fresh. It must 'not' be boiled, pasteurised or sterilized." We must preserve that powerful antiseptic, the *streptococcus lacticus*. Tuberculosis need not be feared. It is a disease of malnutrition—given fresh milk, the infant will not be badly nourished. "To produce tuberculosis feed the babies on a cooked food."

We recommend these new views to our readers. We are certainly impressed by the arguments used by Dr Vincent. In India the problem is complicated by the fact that good milk is hard to get and will not keep long in the hot weather without boiling. The subject is one which needs special investigation in India. It is needless to say that this demand for raw milk applies to infants and children. It must not be taken to apply to milk used by adults, where the nutritive value of it is of comparatively less importance. Dr Vincent says nothing about the use of boiled milk by the sick and on this matter more information is needed.

EXAMINATIONS IN HINDUSTANI

It is notified for general information that the Government of India have approved of the

following Revised Rules for the conduct of examinations in the Higher and Lower Standards in Hindustani, to take effect from 1st October 1911. These rules have been drawn up with a view to exacting from candidates a practical colloquial knowledge of the language.

The examinations, which will not be divided into parts, will be held quarterly* at selected stations in each Division and Independent Brigade at the discretion of the Divisional or Independent Brigade Commander, and will consist of —

<i>Lower Standard</i>		<i>Higher Standard</i>	
<i>Test</i>	<i>Marls Maximum in each sub head —100 Mi nimum to pass —</i>	<i>Test</i>	<i>Marls Maximum in each sub head —100 Mi nimum to pass —</i>
(a) Conversation	50	(a)	60
(b) Viva voce translation into English of selected passages from the text book	65	(b) As for the Lower Standard Test but adapted to the Higher Standard required	80
(c) Questions on selected parts of above, set and corrected by the Board of Examiners	65	(c)	80
(d) Written translation into English of a special unseen printed passage, corrected by the Examining Officer	35	(d) As for the Lower Standard Test but adapted to the Higher Standard required	50
(e) Written translation from English into Hindustani (part of this to be taken from the English translation of the text book) set and corrected by the Board of Examiners	50	(e)	50

TEXT BOOK

A text book edited and published by the Board of Examiners, Calcutta, containing selected extracts from parts 1 to 4 of the Urdu Reader, and a Hindustani adaptation of "Wazir Lankaran."

TEXT BOOK

A text book edited and published by the Board of Examiners, Calcutta, containing "From Sopoy to Subadar," and specimens of modern colloquial Urdu, e.g.—Rasumi Hind, Qissa-i Hind, Chand Pand, Miatul Ans, Fazana-i Azid.

TEXT BOOK

A text book, edited
and published by
the Board of Exa-
miners, Cirencester,
containing select
ed extracts from
parts 1 to 4 of the
Udhu Reader, and
a H i d u s t a n i
adaptation of
“Wazni Lank
eran”

TEXT BOOK

A text book edited and published by the Board of Eva miners, Calcutta, containing "From Sapoy to Subadar," and specimens of modern colloquial Urdu, e.g.—Rasumi Hind, Qisas i Hind, Chand Pand, Miatul Ams, Fazana i Azid

* A special examination will be held monthly, by the Central Boards at Calcutta, Bombay, and Madras.

[†] A candidate who fails to obtain 25 marks in (b) will not be allowed to present himself for re-examination within 4 months.

Failure in one sub-head will entail re-examination in all sub-heads.

The rewards for passing the examinations will be as heretofore, and with reference to paragraph 636, Army Regulations, India, Volume I, will only be admissible on passing the whole examination for each standard.

Boards—The examiner for the tests in both standards must be an officer not below the rank of captain, who has passed at least the Proficiency test in Urdu, and who will be selected by the Divisional or Independent Brigade Commander, in communication with the Secretary, Board of Examiners, Calcutta.

The existing regulations will be amended in due course.

SALVARSAN OR "606"

On the first announcement of this drug we sounded a note of warning against a too ready acceptance of all that was claimed about it. Since it has become more used a great mass of literature has grown up about the use and abuse of this powerful drug. In some cases its effects have been little short of marvellous, in a few cases its use has ended in disaster, and one thing is absolutely clear that it is a difficult drug to use. It must be used in special ways. It cannot be simply prescribed like an ordinary drug, in powder, tablet or solution.

We, therefore, have pleasure in calling the attention of our readers to the most useful and authoritative manual* published at the end of December last, by Messrs Martindale and Westcott, the well-known editors of the invaluable "Extra Pharmacopœia." This little book consists of 77 pages, literally crammed full of information about this new drug. The methods of using this drug are so complex that we have no hesitation in saying that the drug should not be used without this or other handbook aid.

We need not enter into the chemical history of this compound, it is a DIOXY-DIAMINO-ARSENIC BENZOL DI-HYDROCHLORIDE and has as a basis Arsenic. We can only here briefly refer to the uses of this drug, it has been chiefly used in syphilis, and numerous papers have been published, showing its marvellous rapid action in primary and secondary syphilis, so much was made of this that a Russian newspaper entitled an article on the subject the "Liberation of Whoredom," or prostitution without danger!"

In malignant syphilis it has been found very rapidly curative, and it has been said that a single dose is as effective as a five or six weeks' course of mercury.

The authors of the volume before us give copious quotations from the already large literature on this drug, but perhaps the most valuable chapter in the book is that on dosage and

methods of use. It is administered by injection, i.e., intramuscularly, into the gluteal muscles, or subcutaneously into the tissues of the shoulder-blades or intravenously, a method said to be painless. In all cases the solutions must be freshly prepared. The various methods of injection are clearly described in this book, and no one has a right to use this drug who has not carefully studied the rather elaborate methods advocated. In fact, it is not possible to safely or wisely use the drug without the use of a special outfit like that advertised by Martindale. The question of after-effects is ably discussed in this volume. The last 20 pages of the book are occupied with abstracts from leading articles, papers and special communications on the use of this drug. The very real dangers of the drug are pointed out, and while we strongly recommend our readers to study this little book, we may conclude this notice by quoting the opinion of one of the best of specialists in syphilis, C F Marshall, who wrote (*Medical Press, December 14th, 1910*) "We should think twice before recommending '606' to our patients and insist upon a written statement if they demand it." As the drug has been written about largely in an ignorant way by the lay press, this warning is all the more necessary.

In many cases the effects are "magical," but the dangers are real, and one should carefully select the cases on which to try it.

ANTIRABIC TREATMENT IN AMERICA

The Hygienic Laboratory of the United States Public Health and Marine Hospital service at Washington has issued sixty-five bulletins during the past ten years, dealing with a variety of subjects from the point of view of a Hygienic Laboratory. The last issue entitled 'Facts and Problems of Rabies' falls in the last mentioned class and is intended by the author, Dr A M Stimson, to give answers to the inquiries which are said to be made with frequency at the Hygienic Laboratory. Whether the inquirers are medical men or the general public is not clear.

The pamphlet which runs to 85 pp, including a long bibliography, deals with the whole subject of rabies in fairly simple language, though its necessarily technical nature would, one would think, place it beyond the comprehension of the non-technical reader. History, geography, season, pathology, microscopic technique, symptoms, diagnosis, immunity, treatment and suppressive measures are dealt with in turn, and the whole furnishes a most readable digest covering the ground of the article "Rabies" by Sims Woodhead in Allbutt's system of medicine and the two articles on "Lyssa" in Kolle and Wassermann's Handbuch. A few points claim attention.

There is said to be a strain of fixed virus in Mexico, originally derived from one of Pasteur's

* Salvarsan ("606") its Chemistry, Pharmacy and Therapeutics London, 1911 H K Lewis Price, 5s net

rabbits, which now induces symptoms in rabbits in 3 or 4 days and kills on the 6th day.

Pioescher's "Pittsburg" treatment (*N. Y. S. M. J.*, 1909, XC, 688), is mentioned in which 2 or 3 grams of fresh fixed virus are injected daily for 6 days without ill effect.

Oshida's method of removal of the spinal cord entire by propulsion from behind is highly recommended and appears to have superseded laminectomy in several of the American laboratories. It is strange that this method which was invented some ten years ago has taken as long as it has done to establish itself, considering that it presents every advantage conceivable over laminectomy, including simplicity of manipulation. Probably the original description (Cent f. Bakt Ong, XXIX, 1901), was not sufficiently clear, and many workers were not able to grasp exactly what Oshida did, and, failing to imitate him, threw up the method in disgust.

Having once seen it performed, all difficulty is cleared away and it can be repeated at will, as the reviewer, who was fortunate in obtaining a demonstration in the laboratory at Tokio, where it was invented, can vouch.

Treatment of persons bitten by rabid animals by their own medical attendants in their own houses has found considerable favour in America, but, as some technical skill is required in the preparation of the material sent out, it is stipulated by the Hygienic Laboratory, Washington, at any rate, that the virus shall be administered under the immediate supervision of the state health authorities. Small pieces of cord, each representing one dose, are sent out in glycerine with instructions that the bottles are to be kept in an ice box till used.

This system of distributing glycerinated or carbolised vaccine is not yet generally recognised, but the latter is recommended and used by Feirni. Antirabic vaccine is also employed to some slight extent in Europe, but it has not been widely adopted firstly, because the technique of preparing the material for injection is beyond the range of the average practitioner, and secondly, because the condition of the vaccine when it actually come to be injected is an unknown quantity. The virus deteriorates when preserved in glycerine or phenol at a velocity depending on several variable factors, such as strength of preservative, size of fragment, temperature, etc., and, as some of these factors are beyond regulation immediately a parcel is consigned to the post, no man can tell exactly what the potency of the matter injected may be. This of course is a matter of pre-eminent importance, for the due immunisation of the patient depends on the injection of a definite quantity of virulent matter, and injection of matter which has lost its virulence in the post is just a waste of time. The factor of temperature is the one of greatest importance and a system of distribution which would suc-

ceed at low temperatures would fail at higher ones. For instance, in India it would be quite possible, even practicable, to distribute material for injections to various places from the centre of preparation, provided that it could be kept frozen the whole time, but it would not be practicable to distribute glycerinated material, as that would lose its potency too rapidly. Even in the case of small-pox vaccine, it is well known that, whether preserved in lanoline or glycerine, particularly the latter, it deteriorates rapidly in hot weather, so much so, that even when used within a fortnight from the date of preparation numerous failures occur. In small-pox vaccine, theoretically, only an infinitesimal quantity of active virus need be inoculated to produce vaccinia, so that, supposing 90 per cent of the organisms in the tube had died off, the 10 per cent remaining would probably suffice to produce an infection rate of 100 per cent.

Very different is the case of antirabic vaccine which does not reproduce itself in the tissues and cause a generalised though mild disease. Here to produce the effect required the whole of each inoculum must be in an active condition, otherwise the patient will be getting less than the quantity calculated to be necessary to induce a state of immunity.

Stimson in a summary lays stress on the importance of organised measures being taken to eradicate rabies. Treatment in Pasteur Institutes is both costly and troublesome and does not touch the root of the evil. It is like spending money on a cholera hospital without attempting to find and abolish the source of your patient's infection. Preventive measures must come to the fore in connection with rabies as with all other disease. If only a tithe of the money now expended in India in remedial measures were diverted to preventive measures, it would probably soon save itself a hundred-fold but more of this anon.

International Clinics (Vol. III, 20th series, 1910), an illustrated quarterly with its office in Philadelphia, contains an article on hydrophobia of a general character, intended for the guidance of members of the profession less well informed on this particular subject than the writer, Dr Milton K. Meyers. It contains at least one novelty which is quoted below in full:

"Birds are certainly not exempt. I know of one case in which a woman suffering from tuberculosis was bitten by a chicken that had been bitten by a stray dog on account of the coincidental tuberculosis the nature of the hydrophobia which developed was not suspected until just before or, indeed, after the death of the patient, when an examination of the horn of ammon showed the presence of the Negri bodies." The chain of events in this tale is not beyond criticism.

Dr Meyers further states that when the daily doses are sent out to practitioners, the charge made is £ 25, that the cost of a course of

treatment at the New York Institute, including room and board, ranges from \$ 100 to \$ 150, that several States furnish the dried material free to residents of those States, and that certain dealers in biological products, for instance, the Alexander Company at Marietta, Pennsylvania, furnish dried *virus fixe* which is mailed daily to the physician employing it. Exactly what is meant by "dried virus fixe" is not explained. We have already dealt with questions of distributing antiplague vaccine from a centre in India and can only record our opinion that, considering how little is known of the real nature of the material which is called "fixed virus" and of its effect on the system inoculated, it is premature to treat it with as little respect as a bacterial vaccine, the strength of which is known approximately and the effects of which can be measured in some degree. Most decidedly it ought not to be dealt with as an ordinary article of commerce.

THE RESULTS OF QUININE DISTRIBUTION IN ITALY

It is now ten years since the Italian Government passed a law authorising the manufacture of quinine and its retail sale all over Italy. The quinine is put up in cachets, and ten cachets packed in a tube after the manner now used in Eastern Bengal for quinine tablets. The sulphate and chloride of quinine were both used. In badly infected areas the Municipal authorities were obliged to distribute quinine freely, and landowners were obliged to pay for its distribution among the poor residents on their estates. Employers were bound to provide free quinine to their employees and in some places the quinine was sold at below cost price. In infected areas the houses of all officials were made mosquito-proof and a bonus was granted to employers of labour who did the same for the houses of their labourers.

Another important special law was passed which prohibited rice cultivation within a prescribed distance of dwelling-houses—and for the efficient drainage of the ricefields, the mosquito-proofing of all labourers' dwellings near ricefields was made compulsory and child labour under 14 years was prohibited.

The following is a summary of the results—

In 1900 the deaths from malaria were over 15,000 and no quinine was sold in the way above described—in 1902-3 over 2,000 kilos of State quinine was used and the deaths from malaria were reduced to close on 10,000. In 1905-6 quinine to the amount of 18,700 kilos were sold, the malaria deaths fell to 7,800, and in 1907-8 we find a sale of 24,350 kilos of quinine and the number of deaths reduced to only 4,160. A very remarkable reduction in 8 years from 15,800 deaths to 4,160—and this mainly due to increased use of quinine.

These facts show what can be done in India, and the popularisation of quinine, in the two Bengals, especially, will no doubt be followed by a satisfactory change for the better.

We may also call attention to the law controlling rice cultivation. This has been enforced in Italy, yet even in Civil Stations in India, we find rice cultivation in the very heart of the town and close by the residences of the officials and well-to-do people of the town—surely a beginning might be made in restricting wet rice cultivation close by big towns and cities.

THE INDIAN AMBULANCE GAZETTE

THOSE interested in the work of the St John Ambulance Association, which has an influential branch in India, will be pleased to see the publication of the first number (January, 1911), of the *Indian Ambulance Gazette*, which is the official organ of the Indian branch of the Association. It is edited by Mr V Gabriel, CVO, ICS, and Major R J Blackham, RAMC, BL. It gives the formidable list of fashionable patrons of the Indian Branch—on account of the Annual Meeting at Simla on 9th September last, and much information concerning the working of this Association in many parts of India and in other countries. Such a publication must necessarily be of great use to all interested in this movement.

MR DAVID HOOPER, a well-known worker in indigenous drugs, has republished an interesting paper read by him at the Asiatic Society of Bengal, on the subject of animal substances used in indigenous native medicine in India, they are a fearsome and weird list and their enumeration makes us feel thankful that we live in the period of even "coal-tar products." The drugs described by Mr Hooper are said to be sold in the bazaar and "recognised by Hindu and Mohammadan physicians." Some of this list are the following—Sponges, red coral, petrified spines of sea urchins, earthworms, dried, leeches, crabs, prawns, scale insects, the cochineal insect, lac insect, various species of bees, the silk moth, the telemi or blisterfly, the cocoon of a beetle, pearls from various oyster and oyster shells, mussels, conch shells, "crabs' eyes," the cuttlefish, oil of certain fishes, the bile of the rahu fish, the shell of the turtle, sloughs of snakes, dried lizards, oil of the dugong, the sperm whale, and the Gingee dolphin, various parts including the urine, horn and blood of the rhinoceros, the gallstones of the ox, the bile of the buffalo, and the dung of sheep and goats, the Benzoat stone, a biliary concretion found in several animals, camels' blood, stag's horns, musk, bear's grease, the pouch of the civet cat, castoreum from the beaver, bat's dung, and the peculiar unctuous substance called "Mummy."

Mr Hooper has done good work in collecting together information on this matter. It is extraordinary to think that persons are still found to believe in and use the more repulsive of the above substances. In our opinion they are only fit for the cauldron of the witches in *Macbeth*, the ingredients of which they strongly resemble

We are glad to see that at a recent meeting of the General Medical Council the question of the registration, and therefore official recognition, of the diploma in tropical medicine was taken up and favourably considered. We are not aware of any arguments against the official recognition of this diploma. The memorial in favour of making this diploma a registerable qualification was signed by 68 persons, and the General Council has referred to the licensing bodies concerned, and ask their opinions and suggestions to be sent in time to be considered by the Council in February 1911.

We may take it that this diploma will therefore soon become a registerable one, and the Universities and licensing bodies which have not yet started such a diploma will soon fall into line.

THE fifth conference of the All-India Sub-Assistant Surgeons' Association will be held in Ahmedabad on 27th—29th March, 1911.

This Association has already done good work for the medical officers who belong to it, and is deserving of support of all who value the services of this useful class of practitioners.

THE *Philippine Journal of Science* (October 1910) has several useful articles on cholera, and one on the use of Salvarsan "606," as a specific for Yaws. The latter paper we will abstract in a later issue.

Reviews

Diseases of China.—By W. H. JEFFREYS and J. L. MAXWELL. Philadelphia: P. Blakiston's Sons & Co., 1910. Price 6 dollars.

THIS is a useful book and full of information about the diseases of China, including Korea and Formosa. It is written by two medical missionaries in China, and Dr Jeffreys is editor of the *China Medical Journal* from which we have often quoted in these pages.

It aims at presenting to medical men working in China a clear and concise account of the special diseases they will meet with in practice in that Empire. That they have completely succeeded in so doing will be evident to any reader of this book.

The volume consists of just over 700 pages and is well printed on thick paper and admirably and fully illustrated.

The volume begins by an account of modern medical work, the Chinese patient, the language difficulty and then follows a description of the old empirical practice of China. Under the American-Greek title "Nosogeography" will be found an extremely interesting chapter on the geographical distribution of disease in the immense Chinese Empire and excellent maps are published which illustrate what is known of the distribution of various diseases in the provinces of China. We note that scarlet fever has been introduced from Europe, but "this is not true of syphilis," China gives more syphilis than she gets. China has given syphilis to Europe and we are glad to get the testimony of two missionaries that "we have never felt convinced that China, except on paper, owes the commencement of the opium habit to Great Britain." As for Tuberculosis, it is "without any shadow of a doubt more prevalent and more fatal among the Chinese than it is in Europe or America." This too is Indian experience, where for 20 years past the great prevalence of the disease while known to medical men has not yet been understood by the powers that be in India. Dysentery is extremely common in China and September the worst month for it. Cholera periodically sweeps over China. Plague is known to be endemic, but "at the present time" it is less prevalent. Syphilis so serious for Europeans is rare in Chinese. Leprosy is "spread over China as butter on bread just everywhere."

Beri-beri is known, but is not the widespread disease it is in Japan. Malaria is "pretty much all over China." Kala-azar has been recognised. The very characteristic feature of Chinese nosology is the prevalence of worm disease, here again it resembles India, though the actual parasites are not exactly the same, e.g., *Schistosomum Japonicum* is very common in North China. *Ankylostomiasis* is certainly abundant, the parasite *clonorchis sinensis* is widely spread, goitre is found in certain endemic areas, Vesical Calculus is known, but as "nearly every centre will yield from one to ten cases a year for the average hospital," its prevalence corresponds to the distribution of stone in Bengal rather than to its marked prevalence in the Punjab and United Provinces, and this explains at once the attitude adopted in the very valuable chapter on calculus against litholapaxy and in favour of the suprapubic and other cutting methods. It may be laid down as an axiom based on Indian experience that the greater the surgeon's special experience of stone, the more he will incline to the crushing operations. Men with the vast experience of Keith, Keegan and P. J. Feyer, or their present day representatives, H. Smith, Davidson or the late J. A. Cunningham, will in a vast majority of cases

do litholapaxy. The ordinary surgeon who has not had the great opportunities afforded by certain districts in the United Provinces and Punjab, will tend to the suprapubic or perineal methods.

We need not follow our authors in a description of the various diseases, they are admirably treated and the chapters well illustrated. It is a pity that the Editor of the *China Medical Journal* has not paid more attention to the pages of the *Indian Medical Gazette*. If he had, he would have several improvements to make in his chapter on Liver abscess, for example. We should not omit to refer to the very valuable chapter on opium smoking. This is full of information and written in a scientific non-fanatical spirit.

Much of the volume is taken up with Surgery which we especially welcome. This is, as we have before said, a branch of tropical disease that we in India have an enormous experience of, but too little has been written about it.

We have no hesitation in strongly recommending this book to physicians and surgeons in India, and we heartily congratulate Drs Jeffreys and Maxwell on its publication. The publishers too have done their work well. It is a book which no tropical medical library should be without.

Hæmoglobinuria—By DR A E L CARPENTIER London Baillière, Tindall and Cox 3s 6d net

THIS is a very complete little monograph on hæmoglobinuria. The entire literature of the subject has been examined and all of value is quoted in this pamphlet.

The varieties of hæmoglobinuria are many and are all briefly dealt with, e.g., "paroxysmal," "fatigue," hæmoglobinuria "in other diseases," "toxic," "infantile" and "false." The account of blackwater fever is chiefly taken from Dederick's great volume on Malaria.

The book contains in 92 pages a very complete résumé of the literature of this interesting disease or symptom.

The Hygiene of Infancy and Childhood—By A. DINGWALL FORDICE, M.D. (Edin.) Edinburgh E & S Livingstone, 1910 6s net

THIS is an interesting and original book, it does not deal with the clinical and therapeutical aspects of disease, but "correlates the primary scientific facts of medicine as they apply specially to paediatrics."

This will be made clear to our readers if we enumerate some of the chapters in the volume after an introductory chapter. Part I is devoted to the food factor, food and metabolism, diet for healthy children, digestive and metabolic disorders, all of which are good. Part II deals with the factor of heredity and following it the factor of environment. These two chapters are particularly good and useful. The fourth

part of the book, entitled "the bacterial factor," deals with bacterial infection and its peculiarities in childhood. Part V is called "the factor of age period" and deals with the first nine months of life, and up to the close of the third year—and so on, to the concluding chapter on the child as a social unit, which deals with maternity and suckling in the upper classes, infantile mortality and milk supplies.

A useful appendix on heredity will appeal to all students of that ever fascinating if illusive subject.

We can thoroughly recommend this book to the thoughtful practitioner. It will keep him in touch with various aspects of paediatric medicine which he may not otherwise come across.

Surgical After-Treatment—By L. R. G. GRANDON, M.A., M.D. Published by W. B. Saunders and Company

"EACH surgeon eventually grows into a technique peculiar to himself, and there are many roads to success." It is in this catholic spirit that Dr Grandon writes his book, every procedure wherein advised has stood the test of experience. It is largely a reflection of the traditions of the Harvard Medical School, probably the most conservative in a land of restless innovations, but the author shows an intimate knowledge and generous appreciation of the work of other lands, and there is nothing of known importance in the after-treatment of surgical cases which will not be found in this volume, intended for the use of young practitioners until such time as they have evolved methods of their own.

The title is rather misleading, or at any rate there is more in the volume than it leads one to expect, which, after all, is not surprising as it is impossible to write of after-treatment without some discussion of the surgical conditions, but the author has to apologize for exceeding even these limits in places.

The volume is in two parts, of which the first deals with general matters, the sick room, anaesthesia and its consequences, common post-operative complications early and late, and so on, *in extenso*, together with the appropriate procedures to be adopted. It is a perfect mine of condensed information suffused with detail, we might have said, but for the excellent table of contents and index that make reference easy. In fact, it is as a book of reference that this book will be most valuable to the practitioner faced by some unusual contingency.

The second part of the volume deals with specific operations of which no important one in surgery fails of recognition. The operation is indicated and instructions follow for dealing with complications and sequelæ, instructions that are necessarily brief since the first part overlaps the second and cross reference is made easy, so that mere outlines of treatment are here ample.

In the present day no volume on surgical treatment would be considered complete without something on vaccine therapy. Dr Sanborn, a whole-hearted follower of Wright, contributes his most valuable portion of the book. His article of 173 pages is a lucid exposition of the principles of immunization and vaccine therapy, and its detailed application in various surgical afflictions.

An appendix contains a large number of excellent recipes for articles of invalid and convalescent diet which cannot but be useful. Indeed, the young practitioner who has this book of reference owns a vast deal of potential knowledge.

The illustrations are numerous and good, the printing excellent and the editing thorough. We have nothing but praise for Dr Crandon's volume with which the publishers have enriched their valuable surgical library.

The Diseases of Children — By JAMES FREDERICK GOODHART, M.D., LL.D., F.R.C.P., Ninth Edition. Edited by GEORGE FREDERICK STILL, M.A., M.D., F.R.C.P., pp. 931. J & A Churchill, Lond., 1910. Price 15 shillings.

WHEN a book has reached the ninth edition, no lengthy review is required, yet the perusal has been to us a labour of love. We bought the first edition in our student days and we have purchased nearly every successive edition since, and never once have we regretted it. The new edition is issued in new colour and contains a few illustrations. It also comprises more than a hundred pages of new matter over the previous edition. Everywhere we meet with evidence of the care which has been taken to bring the book thoroughly up to date, and most successfully has this been accomplished. The great charm and attraction of this work has always been that it bore on every page the evidence of having been written from actual experience, this feature is fully maintained in the present edition. Often in the past have we been helped out of our difficulties by consulting "Goodhart," and we can from our long experience advise the young practitioner that when in similar perplexities he cannot do better than do likewise. Sound, practical, sensible directions as regards treatment, the result of unrivalled experience, have always been one of the characteristics of the book and we note that appendix I containing many valuable formulas which have worthily stood the test of our own long practice, had also undergone thorough revision.

How to cut the Drug Bill — By H. HIRBLER, M.D., pp. 57. JOHN BALF, SONS AND DANIELSBON, Ltd., Lond. Price 2s 6d 2nd edn.

To those who, like the author, dispense their own medicines, this little work, the outcome evidently of much careful thought and experience, must prove of great value. By following the

instructions carefully given, there is no doubt whatever that great economies can be effected in the cost of preparing prescriptions without any impairment of their therapeutic value. We can recommend the book to those local practitioners, who are many, who have their prescriptions prepared in their own pharmacies. To those in charge of Government dispensaries the book will not appeal. Accustomed as they are to submit supplementary indentures when short of drugs, the instructions in the little book entailing economy at the price of careful thought and some trouble will be addressed in vain.

Manual of Human Embryology — By numerous American and German authors. Edited by FRANZ KRIBEL AND FRANKLIN P. MALL, in two volumes with 423 illustrations. Price 30 shillings each volume.

THE first volume of this comprehensive work has been issued both in English and in German, and the remaining one will shortly be ready, when it will doubtless be the standard work on the subject for some time to come. All that is known concerning the development of the human ovum is fully dealt with, the present volume including the earlier stages, concerning which there are still important gaps in our knowledge, and a detailed account of the development of the integuments, the bony, connective tissue and muscular systems. The general account of the development is also given, and valuable chapters on the membranes, the determination of the age of an embryo or a foetus and on the pathology of the human ovum, are included. The illustrations are numerous and good, including coloured ones, although some of them do duty more than once, in the volume. Some of them are coloured. Very useful bibliographies are added to each section. When completed, the work will be an important addition to medical science and should find a place in all reference libraries.

The Anatomy of Watsonius (n.g.) Watsoni of man — By CH. W. STILES AND GOLDBERGER, Washington Hygienic Laboratory, No. 60.

THIS is another of the very valuable studies in helminths by Mr Charles Wardell Stiles. It is a study of the worm now called *Watsonius n.g. watsoni* in man, with notes on 19 allied species. The pamphlet is a large one, consisting of 264 pages.

It is about time that some stability was reached in this eternal changing of the name of well-known parasites. How many of our readers know what *Watsonius watsoni* is? Under the older name *Amphistoma watsoni* it was described by Conyngham in 1904, some one else called it *paramphistomum*. It appears in Castellani and Chalmers' book as *Cladorchis watsoni*, and now we suppose it will in future be known as *Watsonius watsoni*.

This *Watsonius* was first discovered in the jejunum of a negro who had come from German

West Africa. It has previously been described by Conyngham and later by Shipley. It has no clear pathogenesis, but is associated with diarrhoea.

This monograph is magnificently illustrated, 205 illustrations, many of them whole-page ones. We cannot pretend to do more than call our reader's attention to this monograph.

It derives its name from Dr Watson, of Northern Nigeria, who sent six trematodes home to the London Tropical School in 1904, and they were described by Dr H C Conyngham at the B M A meeting in 1904.

A Treatise on Treatment—By J L CHUNDRA, L M & S, *Calcutta Encyclopaedia and Beeson Art Press, Calcutta January 1911*

THIS volume by Dr J L Chundra, L M & S, is designed for the use of students and practitioners, and is dedicated to Lt-Col R L Dutt, I M S (1st ed.). The writer says he has "elaborately followed those methods of treatment to which general consent or weighty testimony has given a standard place."

The first chapter begins well with an account of fever, and the problems of immunity. The chapter on tubercle is full of information and is less a string of prescriptions than many others are. We note even here the love of new drugs which is so characteristic of the Indian practitioner. On page 21 we find the following drugs mentioned "Aihenal," (?) "Hetol," "Glycero-phosphate of Quinine," "Syrup of Glycose," "Sodium Cinnamati," "Thiocol," "Cacodylate of Soda," and the above in two prescriptions only. "Kugloids" are also "highly recommended." We turn the next page and we find another batch of new preparations "Creasotal," "Urea," "Syrup picis liq," "Syrup of Cascaria Sag," "Syrup of hemidesimus," "Metabolised Cod Liver Oil," "Lofatol," "Muhol," "Cream of Malt, etc," "Nuclein," "Lecithin," "Petroleum Emulsion."

Turning over to, say, page 530, we find for syphilis the following novelties "Iodipin," "Iodaibin," "Iodival" and Sajodin." For chorea (p 595), we find the following drugs recommended "Chloretone," "Tiominal," "Tional," "Aspirin," "Exalgin," "Chloralamide," "Hycocine," etc.

We suppose these ready-made prescriptions are of use or thought to be of use to young practitioners. We remember once a medical student coming to see a sick friend in college rooms and on hearing he had scarlet fever, he whipped out a note book and rapidly read out a prescription which he said was "good for scarlatina"!

We must not, however, let our readers suppose that Dr Chundra's book is all prescriptions. This is by no means the case, a certain amount of clinical matter is added and notes on diagnosis. We do not, however, learn much from the following remark "The writer does not agree with Osler and Dieulafoy that there is no medical

treatment of appendicitis. In India the writer has found from experience appendicitis is quite amenable to treatment, but surgical cases are to be handled with a knife." This is illuminating. While we recognise the amount of care and attention Dr Chundra has taken over this book which does credit to the wide range of his reading, we are not convinced that the book will be of real use. It will only encourage Indian students in their absurd craze for new drugs and new preparations which, however satisfactory to the manufacturers, cannot be said to be of equal value to the unfortunate patients. We have no hesitation in saying that the diseases discussed in this book could equally well be treated if 70 or 80 per cent of the drugs mentioned in it had never been invented.

SPECIAL ARTICLE

THE FREIBURG EYE CLINIC

In several numbers of the *Indian Medical Gazette* for 1904 and 1905, Major R H Elliott, I M S, has given a most interesting account of some of the Continental Eye Clinics. The Freiburg Clinic I do not find that he has mentioned, so I have thought a short account of my visit there last May may be of interest. There are several places named Freiburg, but only two of any importance. One of these is in Switzerland, the other, about which I write, is in Baden, on the edge of the Black Forest, and though quite German in character, is not very far from the Swiss Frontier. The town is a university one and its chief life is in the colleges and clinics. It is also, however, a military centre, about 8,000 troops being stationed there. Add to this that it is a market for Black Forest people and their goods and the occupations of Freiburg are complete. There are no large factories and no extensive commerce. Freiburg-i-B, as it is usually called is on the line of railway from Bale to Cologne along the right bank of the Rhine, so that it is not far, if at all, off the route of Anglo-Indians who land at Italian or Austrian ports. It is one of the cheapest places possible to live at on the Continent. There are several good pensions where university men are quartered, and the general atmosphere of the place is pleasant. I might add that the Germans I met were all extremely polite in helping me to see what I had come for.

The Professor of Ophthalmology at Freiburg is Axenfeld, the author of the work on the Bacteriology of the eye that has been translated into English. His name is also given to the Moix-Axenfeld diplo-bacillus that is found in some forms of conjunctivitis. Axenfeld operates on Tuesdays and Fridays. I will give an account of the operations I saw him do one Tuesday morning. The patients are mostly

countrymen from the Black Forest, a healthy looking race Axenfeld wears, besides a gown, a sterilised face-and-head-covering everyone entering the theatre wears a gown. The theatre has no onlooker's gallery and one has to see as best one can. Axenfeld, fortunately for me, spoke English fluently and was very kind in explaining things. I found he was well acquainted with the work of leading Indian oculists, including Lt-Col Smith. Looking at the operations this morning were two Germans, two Americans, a Canadian oculist from Montreal and myself, so that the English tongue was in the ascendant.

1 The first operation was for senile cataract in the left eye. Axenfeld faced the patient and used his right hand for the incision. He did an iridectomy after the extraction, not cutting a wedge piece from the pupillary border as is usually done, but snipping out the very smallest possible hole in the iris near its attachment. This is his usual operation and if one thinks of the principal reason for which an iridectomy is done, it is certainly a more rational procedure than removing a piece from the pupillary edge where the outflow of fluid is not so inclined to wash the iris into the wound. It has also the advantage of preserving a round pupil. Axenfeld does not do the intracapsular (Smith's) operation except occasionally, and does not care for it. Neither does he wash out the anterior chamber. In the case I saw he left a good deal of soft matter behind, an amount that, judging from my own experience, would not entirely absorb and might give serious trouble. However, his chief assistant told me that it would clear up and that they had had to needle only three cases so far this year. This was in May, but I do not know how many cases had been done up-to-date. From what I have since seen at the Royal London Ophthalmic Hospital, a very large proportion of their cataract extractions require subsequent needling once or more, I do not think the number can be far off 50 per cent. This would not do at all for Indian up-country practice.

2 The next operation was for chronic glaucoma in the left eye. The patient was under chloroform. Again Axenfeld faced the patient, and did very neatly what amounted to a Lagrange operation. He made a conjunctival flap with his incision with a Graefe's knife, did an iridectomy, and with scissors removed a small piece of the sclerotic near the sclerocorneal junction. He said these cases in his experience filtered well. As regards of glaucoma, I might say that the fingers are not relied on in this clinic for ascertaining the tension, but the Schiotz tonometer is used as a routine. Formerly they had tried Priestly Smith's tonometer, but abandoned it as not more trustworthy than the fingers, but Schiotz tonometer is found to be more accurate. At the Royal London Ophthalmic Hospital, a rather conservative place, the fingers

are still relied on, the house surgeon there told me that Schiotz tonometer took up too much time to be a routine application.

3 The next operation was for glioma of the retina in a child of about three years. The left eye was affected. The right eye had already been removed for the same reason about a fortnight previously. There was then no sign of affection of the left eye nor of the optic sheath of the eye removed. The operation now proposed was therefore entirely to save life, in the hope that no part of the brain was yet affected, nor would become so. Enucleation of the second eye was therefore performed. The surrounding tissue appeared to be free, so exenteration was not done. Personally I would not have suggested this operation to an Indian patient. Having removed one eye to suggest the removal of the second with the idea of saving the child's life would seem to a simple mind so far-fetched that one could not expect consent from the patient and might evoke distrust from other patients. And after all the child would be blind and disfigured. Since then I have seen an exactly similar case in London, where the child's second eye was removed for the same reason. But I think one must admit some difference in the ethics of practice in Europe and Asia, and naturally many more differences in custom than in ethics.

4 The fourth operation was for entropion and was done under cocaine. The operation seemed to be a combination of Jæsche's, Arlt's and Gayet's operations. The lid was split and then, so far as I could follow, a piece brought down from the outer angle of the outer flap.

5 The last operation was for removal of the lacrimal sac, which was very neatly done under cocaine injections and in the usual way. The wound was swabbed with adrenalin wherever bleeding obscured the view.

The Hospital appeared to be excellently run one noteworthy feature being that there appeared to be no lack of money felt in equipping it. This is rather a contrast to so many English institutions where the first thing that strikes one is an urgent appeal for funds. I think in Germany these Hospitals are partly financed by the State.

Perhaps the most advanced part of the Hospital was the Pathological Department, as might be expected at a place where Axenfeld was. There is a large amount of material available here, and a better museum of eye specimens I have not seen elsewhere. Sections all ready of all pathological conditions are lying in bottles for any one who cares to stain and mount them for his own.

The lecture room is also up-to-date. In another part are ingenious stereoscopic devices for teaching purposes. The student sits on a chair opposite a stereoscope set up against a wall. He switches on an electric light and by turning a handle photos of patients with various

eye diseases are seen in rotation. This is very useful for demonstrating the appearance of less common affections such as anthrax of the lids, though naturally all common diseases are far better learned in the outpatient room. Another similar stereoscope shows photographs of microscopic preparations. Altogether the eye clinic at Freiburg is very well run and worth a visit even by those who do not understand German. Foreigners pay only 50 Marks for six months' attendance at the clinic and in the laboratories, so one of the Americans informed me, but he said that in addition they would be expected to attend one of the private clinics.

C A SPRAWSON, M.D. (LOND), M.R.C.P.,
CAPT., I.M.S.

January 1911

Medical Society.

ASIATIC SOCIETY OF BENGAL, MEDICAL SECTION

DISCUSSION ON CIRRHOSIS OF THE LIVER AT THE DECEMBER AND JANUARY MEETINGS

A DISCUSSION on the subject of cirrhosis of the liver in India was opened by papers by Lieutenant-Colonel Calvert and Major L. Rogers (see February and March number, I.M.G.) and joined in by the following members:

Lieutenant-Colonel Nott had seen many cases of ascites in Bengal, which were not all due to alcohol, and *post-mortem* the liver might be contracted without being typically *hobnail*. He agreed with Colonel Calvert that cases in India frequently lasted for years and repeated tapings frequently resulted in apparent cures for a year or two, but symptoms commonly recur, and complete recovery was very rare. He had performed omentoplexy in six or seven cases, but in those who recovered continued drainage or repeated subsequent tapping was necessary, the abdomen having filled as quickly as before. He had heard of other cases being operated on without success.

Major Murray had been struck by the great frequency of cases of cirrhosis in the Medical College Hospital and the rarity of the disease in the European Hospital. He had recently injected adrenalin intra-peritoneally as suggested by Sir William Bain. One had died of toxæmia soon after and the other filled up more rapidly than before. Tapping was usually very unsatisfactory, although he knew of one case in which good health was maintained for six years after it. He thought that drainage of the peritoneal cavity into the tissues of the abdominal wall was worthy of further trial.

Dr G. C. Chatterjee agrees with Major Rogers in thinking that most of the cases of cirrhosis seen in Calcutta were not alcoholic as they were

common in Hindu women who did not take it. He had punctured the liver in three cases of infantile cirrhosis and did not find any *kala-azai* parasites in them, while they were sterile as regards bacteria. He had found leucocytosis present in fifty such cases.

Captain Megaw had long been interested in cirrhosis of the liver and thought the process to be an inflammatory one due to bacilli in the liver, and not only toxic in nature. He had investigated the following three successive cases at the Medical College Hospital. The first had fever and marked jaundice and was operated on for obstruction, but nothing found. *Post-n. oitem* acute interstitial hepatitis, with many bacilli resembling *coli communis*, was found. The second case was less acute and lived for a month, and after death a sub-acute inflammation, without *coli* bacilli, was found, while in the third case only excess of fibrous tissue was present. It seems then that the ordinary causation of so-called alcoholic cirrhosis may be a chronic inflammatory process with slight fever and later with ascites, but no recent inflammatory changes. The history of fever, so commonly obtained and often attributed to malaria, may be due to sub-acute hepatitis with contraction of scar tissue and ascites resulting later. Major Rogers thinks that toxins of dysentery and amoeba may cause cirrhosis, but may not dysentery denude the mucous membrane and allow of intestinal bacteria reaching the portal circulation and dysentery be the cause of cirrhosis in this way? Europeans suffer less from cirrhosis, but dysentery in them is treated early and less frequently goes on to ulceration. With regard to operation in one case he had sewn the omentum into the sheath of the rectus muscle in a patient who had been tapped several times in the course of a year. He recovered and is now doing his work on a railway.

Colonel Calvert in reply said he was glad that others agreed with him in regarding the prognosis of cirrhosis as less unfavourable than usually held at home. Injections of adrenalin had not been successful in England. He had experienced difficulty in getting surgeons to operate in these cases, but he thought such measures worthy of further trial.

Correspondence

WANTED, BACK NUMBERS OF INDIAN MEDICAL GAZETTE

To the Editor of "INDIAN MEDICAL GAZETTE"

SIR.—Will you kindly permit me to use your columns for the following appeal—

I am endeavouring to get together a good reference library in the Pasteur Institute of Southern India. In an isolated place like Coonoor it is essential that the Institute should possess complete files of the more important periodicals, but back numbers are often difficult to obtain and generally cost more than we can afford to spend on them.

An officer of the R.A.M.C. has generously presented us with all the back numbers of the Journal of the R.A.M.C.

The back numbers of the *Indian Medical Gazette*, which I desire are however, as far as I can ascertain not procurable for money, so I am in hope that some of your readers may be in a position to fill the gaps for love. I shall be exceedingly grateful if any one can supply us with any of the following numbers —

1906 January, March, April

1905 January, February, March, May, June, August, September, October, November, December, Index

1904 September, October, November, December, Index

1901 January, March, April

1900 and previous years, the whole

There must be dozens of old copies scattered about the country, in dusty boxes, and albums, which are of no use to their present guardians, but there seem to be remarkably few complete files in India available for reference.

Yours, &c.,

J W CORNWALL, M.D.,
MAJOR, I.M.S.,

1st February, 1911

Editor, Pasteur Institute of
Southern India

LIVER ABSCESS, ASPIRATION AND INJECTION OF QUININE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Exception has been taken, in quarters at home carrying authority, to Major Leonard Rogers's method of injecting quinine solution in a liver abscess cavity, after aspiration of its contents, on the ground that this proceeding will be liable to force pus, or the injecting solution, into the hepatic veins, with serious results.

In his paper in the December number of the *Indian Medical Gazette* no mention is made of any such ill effects following the injection of quinine solution into the emptied abscess cavity and presumably they have not occurred. I believe, however, that an explicit statement from Major Leonard Rogers as to whether actual experience affords a basis for the suggested danger might meet criticism of a line of treatment which appears to be full of promise.

I am, &c

CLAYTON LANE, M.D.,
MAJOR, I.M.S.

1st January, 1911

REPLY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In reply to Major Lane's question I may say that the amount of quinine solution injected into a liver abscess in my method of treatment is only a small fraction of the amount of pus first removed, the net result is a great reduction of the pressure within the cavity, so it is inconceivable to me that it can lead to increased absorption of pus. In nearly fifty cases no suspicion of such an occurrence or any other ill effect has been noted. In some cases the abscess rapidly refills, and even repeated injections may fail, and it has to be drained, but as a rule the patient is then in a better position than before to stand the open operation, as he will have been given a course of ipecac and carefully nursed in the meantime. My impression is that the quinine injection treatment is most successful in large abscesses completely contained within the substance of the liver such as have the highest mortality by the open operation, while it is more frequently unsuccessful in those which have already partly escaped into the surrounding tissues, especially small epigastric ones already infiltrating the abdominal wall, which are fortunately just those in which the open operation is least dangerous. A further advance will be made when in those cases ultimately requiring incision some satisfactory system is adopted of siphon drainage into a bottle of antiseptic under the bed, so as exclude aerial infection by bacteria of the originally sterile contents. The simplest method of effecting this is by the use of a long and large rubber tube closely embedded by a suitable sized incision through the liver substance into the abscess cavity. For further guidance we must look to surgeons for careful records of consecutive series of cases treated, on the now well established principle of the possibility of curing many cases by aspiration and quinine injection and the necessity of some form of siphon drainage in those which have to be incised in order to avoid harmful bacterial infection of the discharge which inevitably follows the ordinary open operation in a damp tropical climate, and also to greatly lessen the frequency of exhausting changes of soaked dressings. Lastly, if bacterial infection does unfortunately occur with copious foul discharge and an unhealthy appearance of the wound, daily irrigation with a one per cent solution of potassium permanganate, until the fluid returns undiscoloured, will destroy both amoeba and bacterial toxins and in several cases has produced a healthy granu-

lating wound with greatly diminished discharge within a few days. By these various methods the death rate can be materially reduced in those unfortunate patients in whom an amoebic abscess of the liver has been allowed to develop for want of efficient ipecac treatment in the early stage of the intercurrent hepatitis.

CALCUTTA,
29th January, 1911

LEONARD ROGERS

USE OF MOSQUITO NETS IN ANCIENT EGYPT

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I send you an extract from Herodotus describing how the early Egyptians protected themselves from mosquito bites and at the same time from malaria. The mesh of the fishing net must have been very fine to prevent the ingress of *Anopheles* or *Culex*. The custom of sleeping on the flat roofs of their houses is still common in Egypt and the small tower rising above the roof is found in the representations of some ancient houses in the sculptures. In the same author we read that the people of the marshes besmeared their bodies with "Kiki" or cistro oil the unpleasant smell, like paraffin oil, being disagreeable to the insects.

The extract from Herodotus is as follows —

"The contrivances which they use against gnats, where with the country swarms, are the following. In the parts of Egypt above the marshes the inhabitants pass the night upon lofty towers, which are of great service, as the gnats are unable to fly to any height on account of the winds. In the marshy country, where there are no towers, each man possesses a net instead. By day it serves him to catch fish, while at night he spreads it over the bed in which he is to rest and sleeping in, goes to sleep underneath. The gnats which, if he rolls himself up in his dress or in a piece of muslin, are sure to bite through the covering, do not so much as attempt to pass the net."

The fishing net is I suppose, the hand net such as is used in Port Blair, i.e., cone shaped headed with lead all round the margin. Fortunately on Ross Island we do not require fishing nets nor other mosquito curtains the local mosquito brigade having got rid of these miasma carrying insects. Ross Island is not named after Major Ronald Ross though it might be appropriately so since with the abolition of *Anopheles* on the Island, we have no Tertian, Subterian or Quartan here. Hoping this may be of interest.

Yours, etc.,
ANDAMANS, }
C T FEARNSIDE,
January, 1911

LT COLONEL, I.M.S.

LENGTH OF RUSSEL'S VIPER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR.—Will you kindly permit me to inquire through the medium of your paper if any reader will please inform me directly or indirectly of the biggest known dimensions of a Russel's Viper?

Two years ago it was my good fortune to kill one here with the best markings I have ever seen and last year I shot one 4' 9" long with a girth of 5". I think these measurements are a record. I should further feel much obliged if some one will recommend me a good book on snakes, especially dealing with their habits.

Thanking you for the publication of these queries

I am,
Yours truly,
A BAYLEY DECASTRO,
ASST SURGEON

DIAMOND HARBOUR,

[See Capt Green Armistage's paper in this issue — ED., I.M.G.]

RURAL INSANITATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I would consider it a great privilege if the following lines are permitted a corner in your well esteemed journal.

Public opinion goes in favour of inaugurating certain measures to alleviate the insanitary condition of the rural population. This is indeed a complex problem which has so long remained unsolved. Attempts have been made to advance theories after theories on the subject by different observers, but seldom have they met with the whole hearted support of the people and the Government. Financial commodity has, in the majority of cases, stood in the way of bringing the broader and costly schemes into action. But the delay is not, however, an indication of aloofness on the part of the responsible authorities, who have not only

enquired into the subject, but their attention is towards placing the Sanitary Department on a sounder and better financial basis. The Municipalities and District Boards have also been especially instructed to set apart a portion of their incomes for sanitary purposes. As I have observed along with others that it is not a question to be lightly dealt with, it rests with us and the authorities to ascertain first where to begin. To search for remedy before the diagnosis of a disease is to put the cart before the horse. I have with sincere regret often noticed my countrymen throwing the blame entirely on the shoulders of Government, apparently in the idea that they have nothing to do, and it is the Govt alone to do everything as the latter are *Ma Bap* to the people. But may I be permitted to tell my countrymen that without adequate co-operation from the people there is no reasonable hope of success.

My humble opinion is that the beginning should be made by the people themselves. Unless the people assert themselves that it is their duty to keep up a day's earning for their own health and they owe this to their country in the matter of sanitation, there is no prospect of improving the insanitation of Indian villages. Co-operation and enthusiasm on one side and help and protection on the other is the key note of success. Funds are sure to be forthcoming if there is an earnest and organised effort on the part of the people. "Education" gives the man light and affords the idea and knowledge of "Self help". Natural tendency to independence comes from education. And it is quite natural therefore that there should predominate a great deal of prejudices and superstitious customs, suicidal to their own causes amongst the ignorant masses, who will naturally depict the actions and ideas of the authorities and the educated classes. To educate the mass first and then present the theories concerning sanitation next before them is a theme which requires the absorbing attention of the thinking public. To give effect to this the wealthy aristocrats and educated class are the proper and invaluable agencies.

The remedy mostly rests with us. Malaria, Cholera, Small pox, and Plague are all preventable diseases. And these four scourges principally sweep away a good many lives from every village every year. To reduce their influence to a minimum, good, sufficient and nourishing food, good air, good and healthy surroundings, improved and efficient drainage, good, sufficient and pure water supply, adequate exercise, prevention and destruction of disease originating agencies—parasites and micro organisms, prophylactic measures to cope with the individual diseases, general sanitation and last but not least, special attention to personal hygiene, are generally approved remedies. Education is the medium to follow the dictates of the Sanitary Science and penetrate its principles.

I therefore, beg to appeal to my countrymen that the cause and remedy mostly remain with them, and it is high time that they should devote their time, energy and money for the education of the mass, and I beg to impress our representatives that mere writings in the press and speeches on the platform and warm criticism do not really benefit those whom they represent. Whole hearted co-operation impregnated with the idea of ameliorating the condition of the poor helpless mass will not only strengthen the hands of the authorities, but it will touch the actual needs of the day.

BARRACKPORE, }
Yours etc.,
14th January, 1911 } SATKARI GANGULY,
Sub Assistant Surgeon, F B S R

HILL HEALTH RESORTS IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I shall feel myself highly obliged if some of your readers, having some experience of the numerous health resorts of India and the Far East, be so kindly disposed as to furnish either through your valuable medium information regarding those places, particularly touching the following points:

- (a) Situation of the place—hills or plains, &c. Height above sea level and other particulars peculiar to the place
 - (b) Character of the soil
 - (c) Water, general characters and source, the water supply
 - (d) Temperature, suitability of patients during summer or winter. Humidity, amount of rainfall
 - (e) Climate particular diseases for which suited, and why
- Although it is so very important that a scientific knowledge of these health resorts should be known to the profession, very little work seems to have been done on the subject.

I remain,
Yours etc.,

B N GHOSH, I M S

[Will any of our readers reply?—ED, I M G]

THERAPEUTIC NOTICES

'TABLOID' CHEMICALS FOR COLOUR PHOTOGRAPHY

The production of photographs in natural colours apart from its artistic interest is a valuable addition to weapons of the scientist, and will doubtless become increasingly the recognised method of recording observations of pathological conditions wherever the element of colour is of importance. For instance, photographs of skin diseases, histological specimens and examples of abnormal growths, gain much in clearness and in the amount of information conveyed—when faithfully reproduced in colour.

Anything which serves to simplify the method is therefore of importance.

The chemical processes involved in the production of such photographs, for reversing the image and for intensifying the colours, have now been conveniently provided for in a set of three 'Tabloid' products which enable the amateur to experiment with all brands of colour plates now on the market, with the minimum expenditure of time and trouble.

The whole process of development, reversal, ie development and intensification can be carried out with solutions of 'Tabloid' Kytol, 'Tabloid' Reversing Compound and 'Tabloid' Colour Plate Intensifer, and by following the instructions given successful results in natural colour can be obtained with the Autochrome, Thames, Omnicolor and Dufay plates.

We are informed that MR ERNST LEITZ of the famous firm of Leitz, manufacturers of lenses and microscopes, has had conferred on him *honoris causa*, the degree of Doctor by the University of Muenster.

We have received a copy of a lecture on antiseptic shaving and the use of antiseptics by barbers and hair dressers—in which the great use of the valuable preparation IZAL is pointed out. We are informed that it is in use in many of the leading shaving saloons at home and abroad.

We have received a number of useful pamphlets from the well known firm of G D Cunick Co, of New York, U.S.A., on diabetes and its treatment. The pamphlet on treatment of this disease by TRYPSOGEN is of special interest. It is a specific ferment therapy, and Trypsogen sold in tablets is made up of the Enzymes of the islands of Cangerhaas—the tryptic and amylolytic ferments with gold bromide, &c.

TWIN SCISSORS FOR SCLEROTOMY (HERBERT'S OPERATION)

By N BISHOP HARMAN

The instrument shown in the figure is designed to facilitate the performance of Herbert's operation of sclerotomy for the relief of Chronic Glaucoma. The idea in view has been to reduce the difficulty and time involved in making the two lateral cuts for the valve like Scleral flap which is the feature of this valuable operation.

The instrument has been modelled upon the plan, and does the work of two pairs of scissors, so that it has been called "TWIN SCISSORS".

It makes, on the gradual and shearing approximation of its blades, two parallel cuts, each 4 mm in length and separated from each other by 3 mm. In appearance it is something like a needle holder, but the blades are different. The lower or male blade is flat and bevelled so that each side presents a sharp edge, its free end is rounded and blunt and projects 2 mm beyond the female blades. The upper or female blades are a pair of parallel, sharply bevelled blades springing from a common stump.

When the handles of the Scissors are closed the female blades shear down on the sides of the male blade and come to rest, overlapping it.

The instrument shown has been used for operating on four human eyes with successful results, it was then used to cut sheep's eyes, rubber sheeting, cloth and paper, until the keenness of the blades was dulled, then it was successfully sharpened.

The lower handle of the instrument has a novelty in the provision of a finger plate, which gives a very steady and easy grip of the scissor. In cutting with the scissor it is essential to press the handles together evenly. Thin cuts with the scissor should be made on rubber sheeting, but not on paper or card.

In operating with the instrument I have found it convenient to first turn forward a flap of conjunctiva from the chosen site of the sclerotomy, then the keratoma is inserted into the sclerotic 4 mm from the clear corneal margin and passed through and under the sclerotic until its point appears within the corneal angle, it is pushed on until a clear 3 mm of the blade is within the anterior chamber, now the male blade of the twin scissor is pushed along the track of

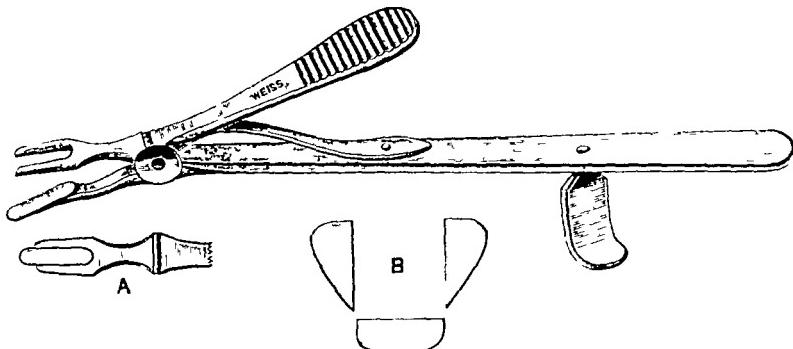
CALCUTTA

the wound until the projecting 2 mm of the blade shows within the anterior chamber; the scissos are then closed the cuts made, the male blade gently withdrawn and with the replacement of the conjunctival flap the operation is complete.

The Twin Scissors are made by Messrs John Weiss & Son, of London.

is granted privilege leave for one month and twenty one days combined with furlough for one year ten months and nine days under Articles 233 and 308 (b) of the Civil Service Regulations, with effect from the 4th November 1910.

MAJOR A. FENTON, I M S, Civil Surgeon, Mandalay, is appointed to officiate as a First Class Civil Surgeon in place



Service Notes

SURGEON MAJOR HENRY HYDE, Madras Medical Service, retired died on 12th October 1910. He was educated at King's College London took the diplomas of M R C S in 1865 and L K Q C P in 1866 and entered the I M S as Asst Surgeon on 1st October 1866 becoming Surgeon on 1st July 1873 Surgeon Major on 1st October 1878 and Surgeon Lieutenant Colonel (when that rank was instituted in 1891) from 1st October 1886. He retired on 25th May 1895. The Army list assigns him no war service.

LIEUTENANT COLONEL ROBERT EVANS STUART DAVIS, of the Madras Medical Service, retired on 29th October 1910. He was born on 29th October 1855, so had attained the age of 55. He was educated at Trinity College Dublin, where he took the degrees of M B and B Ch in 1880 and entered the I M S as Surgeon on 30th September 1882, becoming Surgeon Major on 30th September 1884, Lieutenant Colonel on 31st September 1902, and being placed on the selected list on 17th May 1910. He served in the Burmese war of 1885-87 was mentioned in Despatches G G O No 34 of 1887, and received the medal and clasp, most of his service had been spent in civil employ in Burma, where he served in the Jail Department and afterwards held the Civil Surgeoncy of Rangoon for some years past.

IN the January Army List the batch of Lieutenant Colonels, I M S, on the selected list is interesting reading.

The 21 places for Bengal Presidency men are filled up the last on the selected list being Lieutenant Colonel C J H Bell, I M S, the I G of Prisons in Burma whose first commission is dated 1st April 1846. In the nine Bombay places we find only eight names, the last being Lieutenant Colonel C H L Meyer, I M S, the Principal of the Medical College, Bombay, and there will this year be several more vacancies on this side. In Madras there are eleven places, but we find only nine places filled, the last being Lieutenant Colonel J F Dewes, I M S, whose first commission dates from 1st October 1887. The list is so carelessly printed at this point that it is not easy to say if the names of Lieutenant Colonel H Thomson, the Sanitary Commissioner, Madras, or Lieutenant-Colonel Robertson, I M S, the Professor of Medicine, are or are not included in this list. It is obvious that both should be if so, the list has been very badly printed.

MAJOR T W IRVING Indian Medical Service (Bombay), an Agency Surgeon of the 2nd class is posted on return from leave, as Civil Surgeon, Peshawar, with effect from the 4th November 1910.

MAJOR W LETHBRIDGE, Indian Medical Service (Madras), an Agency Surgeon of the 2nd class, is posted as Medical Officer, Mewar Bhil Corps, with effect from the 25th October 1910.

LIEUTENANT COLONEL R. C MACWATT Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, and Residency Surgeon in the Western States of Rajputana,

of Lieutenant Colonel A O Evans, I M S, on leave, with effect from the date on which Lieutenant Colonel R H Castor, I M S, returned to duty from leave.

MAJOR M DICK I M S, officiating First Class Civil Surgeon, reverts to his substantive grade with effect from the date on which Lieutenant Colonel R H Castor, I M S, returned to duty from leave.

ON the termination of the general duty in connection with plague in Burma to which he was appointed in this department Notification No 243, dated the 28th July 1910, Captain W F Brayne, I M S, is appointed Special Plague Medical Officer, Pegu Division, in place of Captain H B Scott, I M S, transferred.

ON relief by Captain Birne, Captain H B Scott I M S, is appointed Special Plague Medical Officer, Meiktila Division.

LIEUTENANT COLONEL EDWIN FRANCIS HORATIO DOBSON, I M S, Indian Medical Service, Bengal is permitted to retire from the service subject to His Majesty's approval with effect from the 27th November 1910, he having on that day completed 30 years service for pension. Colonel Dobson of recent years has been employed in the Medical Stores Department at Calcutta and for the last few months at Lahore. Before that he was for many years a well known Civil Surgeon in Assam, and when stationed at Dhubri it fell to his lot to examine and pass countless coolies going to Assam for employment in the tea gardens, many will remember his epoch making papers at the Calcutta Medical Congress in 1891, when he demonstrated the widespread prevalence and comparative harmlessness of the *Ankylostoma duodenale*, which, at first, was connected with the causation of "coolie's anaemia," "Assam beri beri," and "Kali urar" as cases were variously called. This good work of Colonel Dobson's though mentioned in some text books is not always remembered. Colonel Dobson was a keen horse owner and kept some of the finest carriage horses in Calcutta.

MAJOR A LEVENTON, I M S, is appointed Civil Surgeon Darrang.

LIEUTENANT COLONEL G H BALFR, I M S, acts as Civil Surgeon, 1st class, vice Lieutenant Colonel J J Pratt, I M S, on leave.

ON return from leave Captain R M Dalziel, I M S, is posted to Mooltan as Superintendent, Central Jail, and Captain W T Finlayson I M S, goes to Lahore, relieving Captain R A Chambers I M S, whose services are placed with Home Department, Government of India.

MAJOR C DONOVAN, I M S, is due back in Madras from three months' privilege leave on 10th March 1911.

MAJOR E M ILINGTON, I M S, is due back from long leave on 14th February 1911.

MAJOR A MILLER, I M S, has obtained 18 months' combined leave up to 18th June 1912.

MAJOR R BRYSON, I M S, has got leave up till October 7th, 1912.

CAPTAIN M N CHAUDHURI, I M S, is due back from leave on 15th May 1911.

CAPTAIN T W HARLFY, I M S, is due out from leave on 10th June 1911.

CAPTAIN W R J SCROGGIE, I M S, acts as Civil Surgeon, Coorg, from 1st February 1911.

CAPTAIN E A ROBERTS, I M S, got an extension of leave and is not due out till 17th July 1911.

CAPTAIN C R O'BRIEN, I M S, M B, is confirmed as a Civil Surgeon, E B and A, from 1st September 1910.

MAJOR A FENTON, I M S, Civil Surgeon, Mandalay, is appointed to officiate as First Class Civil Surgeon in place of Lieutenant-Colonel F J DEWES, I M S, who has proceeded on leave.

MAJOR C DUER, M B, F R C S, I M S, is appointed as Civil Surgeon of the First Class with effect from the 29th October 1910 in place of Lieutenant Colonel R E S Davis, M B, B Ch, I M S, retired.

MAJOR E R ROST, I M S, Officiating Senior Civil Surgeon, Rangoon, is appointed as First Class Civil Surgeon, sub *pro tem*, in place of Major C Duer, I M S, whose services have been placed at the disposal of the Government of India.

LIEUTENANT COLONEL F J DEWES, I M S, was employed on general duty at the General Hospital, Rangoon, on the 22nd and 23rd November 1910 prior to proceeding to Maymyo as notified in this department Notification No 354, dated the 23rd November 1910.

THE HON'BLE LIEUTENANT COLONEL C MACTAGGART, I M S Inspector General of Prisons United Provinces, was granted privilege leave, combined with furlough, on medical certificate, for a total period of twenty months, from the 27th February 1911.

LIEUTENANT COLONEL S H HENDERSON, I M S, Superintendent of the Central Prison at Alipore, to officiate as Inspector General of Prisons, United Provinces, vice the Hon'ble Lieutenant Colonel C Mactaggart, I M S, granted leave.

CAPTAIN A W OVERBECK WRIGHT, I M S, supernumerary Superintendent of the Central Prison at Alipore, to officiate as Superintendent of the Central Prison, vice Lieutenant Colonel S H Henderson, I M S.

MAJOR E J O'MEARA, I M S, Civil Surgeon of Naini Tal, is placed on special duty.

MILITARY ASSISTANT SURGEON H C THOMPSON, I M D, Assistant to the Civil Surgeon of Naini Tal to hold civil medical charge of that district in addition to his own duties, vice Major E J O'Meara, I M S, placed on special duty.

LIEUTENANT COLONEL W VOST, I M S, Civil Surgeon, was posted on return from leave to Saharanpur.

LALA MAYA Das, Assistant Surgeon, made over charge of the duties of the Superintendent of the Sirikot district jail to Lieutenant Colonel D T Lane, I M S, on the afternoon of the 7th January 1911.

CAPTAIN D H F COWIN, I M S, made over charge of the duties of the Superintendent of the Dera Ghazi Khan district jail to Lala Har Narain on the forenoon of the 14th January 1911.

HIS Excellency the Viceroy and Governor General has been pleased to make the following appointments on His Excellency's personal staff, with effect from the 23rd November 1910 —

To be Honorary Assistant Surgeons

Assistant Surgeon Khan Bahadur Palanji Hormajji Dadaji Chanchi, Bombay

Assistant-Surgeon Rai Baldeo Singh Bahadur, United Provinces

Assistant Surgeon Gopal Chandra Mukherjee (1), Eastern Bengal and Assam

Assistant Surgeon Andrew Paskal Fernandez, Madras

Assistant Surgeon Raj Surendra Nath Baist Bahadur, Central Provinces

Assistant Surgeon Rai Sahib Lala Lichman Das, Punjab

Assistant-Surgeon Kamini Kumar Chatarpur, Burma

MAJOR E L PERRY, I M S, has been placed on special duty under the order of the Sanitary Commissioner with the Government of India.

CAPTAIN F E WILSON, Indian Medical Service an official Agency Surgeon of the 2nd Class, is posted as Agency Surgeon Meshed, and *ex officio* Assistant to His Britannic Majesty's Consul General and Agent to the Government of India in Khoisan, with effect from the 23rd December 1910.

THE undermentioned 4th Class Assistant Surgeons, having completed five years' service in that class, to be 3rd Class Assistant Surgeons, with effect from the 31st December 1901 —

Edgar Odmond Bowie
George Urbain Oakley

LIEUTENANT M J HOLGATE, M B, I M S, held charge of the Civil Surgeoncy of Ahmednagar from the 16th November 1910 to the 18th December 1910 in addition to his own duties.

MAJOR P DEF, I M S, on furlough has been granted an extension of leave for 2 months on medical certificate.

ON relief by 1st Class Military Assistant Surgeon R H W Hart, Lieutenant Colonel A Buchanan, I M S, Civil Surgeon, Amritsar, is appointed to officiate temporarily as Inspector General of Civil Hospitals, Central Provinces, vice Colonel J A Cunningham, M D, I M S, deceased, and pending the arrival of Colonel Dennys, I M S.

FIRST Class Military Assistant-Surgeon J A F Harvey Officiating Civil Surgeon Mandla, is confirmed in his appointment, with effect from the 1st February 1910, vice Captain T G N Stokes, M B, I M S, appointed Sanitary Commissioner, Central Provinces.

SECOND Class Military Assistant Surgeon J Doyle, Officiating Civil Surgeon, Bilaghat is confirmed in his appointment with effect from the 7th September 1910, vice Honorary Captain M Windross, retired.

MILITARY Assistant Surgeon G R Chamalett has been posted to Gurgaon as Civil Surgeon.

CAPTAIN W W JENIWINF, I M S, acted as Civil Surgeon of Rawal Pindi during the absence on deputation of Lieutenant Colonel W Ronaldson Clark, I M S.

RAJ SAHIB PANDIT ATAR CHAND, Civil Surgeon of Ludhiana, was granted 6 months' leave from 1st January 1911.

HIS Excellency the Governor of Bombay is pleased to appoint Captain J L Lunham, M B, F R C S, I M S, Civil Surgeon, Surat, to officiate as Surgeon to His Excellency during the absence on leave of Captain T C Lucas, R A M C.

MAJOR H J WALTON, I M S, Civil Surgeon, on completion of his special duty, resumed charge of the office of Civil Surgeon of Bulandshahr.

CAPTAIN C C MURISON, I M S, D P H has taken the Fellowship of the Royal College of Surgeons, Edinburgh.

CAPTAIN F W CRAGG, I M S, has passed the Examination M D (Edin.), December 1910.

OF the I M S Officers who went in for the Examination of the London Tropical School at the end of last year all without exception passed with distinction viz, Major Clayton Lane, M D, Captain H C S Webb, Captain J H Murray, Captain F V O Bait, Captain W M Anderson and Captain L E Gilbert.

Complaints have been made as to the Examination, but we have not sufficient information to say more than this.

THE undermentioned officers are appointed specialists in the subjects named with effect from the dates given against their names —

Advanced Operative Surgery

Captain W H Cazaly, I M S, 5th (Mhow) Division Dated 21st December 1910.

Electrical Science

Lieutenant A S Khan, I M S, 9th (Secunderabad) Division Dated 14th December 1910.

Midwifery and Diseases of Women and Children

Major R H Price, I M S, 4th (Quetta) Division Dated 16th December 1910.

Lieutenant W D Keyworth, I M S, 6th (Poona) Division Dated 19th December 1910.

THE services of Captain C A F Hingston, I M S, have been placed permanently at the disposal of the Madras Government

MAJOR S ANDERSON, I M S, reported his departure from India, on leave, on the 29th December 1910

CAPTAIN O ST JOHN MOSES, I M S, is appointed substantively *pro tempore* ~~as~~ Police Surgeon, Orissa, and Professor of Medical Jurisprudence, Medical College, Calcutta, with effect from the 27th November 1910, vice Major W D Hayward, I M S

CAPTAIN H C BROWN, I M S, has been appointed specialist in Prevention of Disease, Jullundur Brigade, with effect from 13th December 1910

MAJOR T B KELLY, I M S, is appointed a specialist in Ophthalmology

LAIKA HARI CHAND is appointed a Civil Surgeon (sub *pro tempore*) vice Lieutenant Colonel Adie, I M S "seconded under Art 90 of C S Regulations"

LIEUTENANT COLONEL ADIE is on special military duty

MAJOR A F W KING, F R C S (Ed), I M S, was granted one month's privilege leave from 14th November 1910

ASSISTANT SURGEON J E BOCARRO, I M S, was granted six weeks' privilege leave and Assistant Surgeon P A Cudeno acted for him

ASSISTANT SURGEON A C PFREIRA has passed in Burmese by the higher standard, Assistant Surgeons D S Jackson and A E Hamlin, by the lower standard, and Captain O F Muir, I M S, and Assistant Surgeon P A Scanlon, by the elementary standard

UNDER the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations privilege leave to the extent due combined with furlough and study leave for a total combined period of two years is granted to Captain H A Williams I M S Resident Medical Officer, General Hospital, Rangoon, with effect from the date on which he may avail himself of the privilege leave

THE following postings and transfers are ordered in the Medical Department Burma —

On return from leave Senior Military Assistant Surgeon and Honorary Lieutenant R McKie to be Civil Surgeon Myitkyina, in place of Second Class Military Assistant Surgeon W L Brookes, transferred

Second Class Military Assistant Surgeon W L Brookes to be Civil Surgeon, Kindat, in place of Senior Military Assistant Surgeon and Honorary Lieutenant L K Rodriguez transferred

Senior Military Assistant Surgeon and Honorary Lieutenant L K Rodriguez to be Civil Surgeon, Yamethin, in place of Second Class Military Assistant Surgeon D D Stewart, proceeding on leave

THE following postings and transfers are ordered in the Civil Medical Department, Burma —

Captain S T Ciamp, I M S, Civil Surgeon, Loimwe, to be Resident Medical Officer General Hospital, Rangoon, in place of Captain H A Williams I M S, proceeding on leave

First Class Military Assistant Surgeon G W Vincent to be Civil Surgeon, Loimwe, in place of Captain S T Ciamp, I M S, transferred

ON his return from leave Captain G H Stewart, I M S, is appointed to be Civil Surgeon Taunggyi Southern Shan States, in place of Senior Military Assistant Surgeon and Honorary Lieutenant A E Hamlin, transferred

UNDER the provisions of Articles 260, 233 and 605 of the Civil Service Regulations and with reference to Articles 435 and 436 of Army Regulations India, Volume I, privilege leave for three months and furlough out of India for nine months in continuation thereof, is granted to Military Assistant Surgeon D D Stewart with effect from the date on which he may avail himself of the privilege leave

CAPTAIN B TOSHER I M S, Resident Surgeon European General Hospital, Calcutta, goes on furlough in March

LIEUTENANT COLONEL F C DRURI, M B (Dub), I M S, Principal Medical College, Calcutta has completed his two months' training at the P M O's office, Lucknow, and goes shortly on furlough Lieutenant Colonel J T Culver, M B, M R C P (Lond), will act as Principal

CAPTAIN F H STEWART, I M S, on rejoining military employ, is appointed to the medical charge of the 27th Punjab Battalion at Alipore, Calcutta

MAJOR G Y HUNTER, I M S, Superintendent, Presidency Jail, Calcutta, goes on leave in March and Captain W G Hamilton I M S, will act for him at the Presidency, and Captain F H Salisbury, I M S, will take over charge of Midnapore Central Jail

ON the transfer of Lieutenant Colonel C Fernside, I M S, Major J M Woolley I M S, will go to Port Blair as Senior Medical Officer in the Settlement

CAPTAIN D N ANDERSON, M B I M S, Officiating Civil Surgeon, has been granted, by His Majesty's Secretary of State for India, leave on medical certificate for six months, in extension of the furlough on medical certificate granted him by Order No 2322, dated the 30th September 1910

LIEUTENANT COLONEL H E BANATVAIA, I M S, Civil Surgeon who was granted combined leave by Order No 1362, dated the 22nd June 1909, has been granted, by His Majesty's Secretary of State for India, study leave from the 1st to the 26th August and from the 5th to the 30th September 1910

THE King has approved of the retirement of the following officers of the Indian Medical Service —

Brevet Colonel Johnston Shearer, C B, DSO Dated 6th December 1910

Lieutenant Colonel John Adolphus Burton Dated 6th December 1910

Lieutenant Colonel George Ernest Brooks Dated 6th December 1910

Major Thomas Alfred Ollivant Langston Dated 12th December 1910

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles Letters, and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

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BOOKS, REPORTS, &c., RECEIVED —

The U S Pharmacopœia, comments on (Washington Government Printing Office)

The Stigmaria plates of the Tick By Stiles (Washington Government Printing Office)

The Effects of a Restricted Diet R Hunt (Washington Government Printing Office)

Records of Indian Museum Index 1901, Vol III

Records of Indian Museum Vol V Part IV

Memoirs of Indian Museum Vol III I Fishes

R Ross Summary of Facts regarding Malaria (Price 2d) (J Murray)

Rajputana Annual Reports

Major S Anderson's Hints to Dressers (Price 1s) (Thacker, Spink & Co)

Martindale and Westcott's Salvarsan, &c. H K Lewis & Sons Diseases of China Jeffreys and Maxwell (P Blackston & Co, Philadelphia)

Imperial Library Catalogue Calcutta

Monks Manual of Medicine (3rd Edition) (Baillière, Tindall & Cox)

Proceedings Royal Soc of Medicine Vol IV, No 2 (Longmans, Green & Co)

Ross Cancer & Cell Reproduction (J Murray)

Parapluvialisme et Fleurs des Pay Chauds (Paris J D Baillière et fils)

The Prescriber Vol IV

Journal of Hygiene Vol 10, No 4 Cambridge Press

Muir & Ritchie's Bacteriology 5th Edition Henry Frowde

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Original Articles.

HÆMATEIKONA THE SIGNIFICANCE OF THE BLOOD PICTURE IN DISEASE.

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THE study of the blood with the impetus it has acquired in the Tropics since the appearance of our Honorary Secretary's volume on "Fever in the Tropics" needs little in the way of apology as the subject of my remarks this evening, but on this his last appearance amongst us in that capacity, it is perhaps fitting that the subject he has done so much to elaborate should receive special attention even though the speaker be yet the least among many brethren of the microscope.

The microscope to-day is to the clinician what the rifle is to the soldier, but in the large hospitals only, with a special staff to overtake this branch of the work, has it been possible to carry out systematic enquiry into what must prove in its further development one of our most rapid, most effective, and most simple methods of diagnosis. To a few, working in isolated places and endowed with the requisite leisure and knowledge of microscope technique, the fascination of the laboratory has proved its own reward, and from the simplest of beginnings, the study of normal blood perhaps and the recognition of the more common parasites, one is gradually led to more extended enquiry and to the delightful experience of breaking flesh ground. Such has been my own experience, and situated as I am in medical charge of a Railway District which enters three provinces, it has been my privilege to have both the leisure and the material to indulge my hobby. My District embraces 461 miles of line with head-quarters at Gaya and out-station dispensaries at Gomoh, Gujhandi, Dehuri-on-Sone, Daltonganj and Nawadah. There is a small Cottage Hospital for Europeans (6 beds) at Gaya and a Native Hospital of 8 beds. A few indoor cases are received at Dehuri-on-Sone and Gomoh.

The staff on the District is not large, comprising 158 Europeans and East Indians, 629 higher class Indians and 4,583 menials. In addition I draw for my material on the Civil and Zenana Hospitals and the Jail at Gaya, and specimens are from time to time submitted for examination by the other members of the Railway Medical Department.

During the first 6 months of the year the work, amounting to 347 cases, came mostly from the Head-quarters Section, and an effort was made to statistically classify the stations on the District in terms of "Fever". Before the half year was over I was enabled to add very

considerably to the equipment of the Laboratory, and, with increased facilities, considerably more work was undertaken, the figures for the second half of the year rising to 1,118. This gives a list of 1,500 examinations nearly for the whole year, involving a certain amount of labour and not least in the necessary correspondence and book-keeping. Cases and diseases alike have been cross-indexed throughout, charts kept, blood counts, total and differential, tabulated and classified, and it is the results obtained from this year's work which I now lay before you in the belief that others will be stimulated to use in their practice more than heretofore the simple technique that brings the microscope within the daily routine of even the busiest among us.

There are so many excellent text-books to-day on Pathological technique, Tropical laboratory work, study of the blood, etc., that with a little patience and application the rudiments are easily acquired, and in every direction in tropical diseases persistence spells progress. This is the day of the individual worker, and one does not aim at teaching so much as at learning. We certainly gain much, and morally, as well as intellectually, but our constant reward is the improvement in the patient and we all know how splendid a reward for all our labour that is.

None of us, I take it, are satisfied with the present official classification of fevers in the Tropics. None of us accept as of any real value the carefully compiled record of "Malaria Fever" which disfigures our Annual Returns. We know that most of these so-called "Malarias" should appear under other names, but surely it is for us to clear up much of the darkness that surrounds our subordinates and by systematic and prolonged study endeavour to make our chaos cosmos. This primarily has been my object in insisting upon every sick certificate for "Fever" during the past year in my District being accompanied by a brief clinical description and a blood film. At first one trusted to the presence or absence of the parasite to identify malaria, and other fevers were recorded as simply "non-malarial". A differential leucocyte count was, however, made and registered, and gradually one began to recognize in the Notes for the month a grouping of counts which gave identical or closely similar blood pictures; these again as the lists grew to larger proportions tended to sort themselves out in sub-groups with history, symptoms and blood counts alike, and thereafter the labour was forgotten in the interest. Mistakes were made but were followed up, and at times a number of such mistakes led to the inclusion of a new and unsuspected sub-group. Fever returns of "Negative" or "Normal" appeared in the Register as the year passed, older readings were invested with a new meaning, the same train of symptoms in the same man after an interval of months would take one back to his first blood count, and now at the

* Being an Address delivered before the Medical Section of the Asiatic Society of Bengal.

end of the year the Fever returns of the District have begun to show some resemblance to a well-considered and reasonable classification

THE ELEMENTS OF THE BLOOD PICTURE

Perhaps the most modern theory of the origin of the blood elements is that which assigns to the red marrow the elaboration and distribution of both red blood cells and leucocytes. This is not the time or place to introduce the many theories held of the relative origins of the different white cells or to enumerate the stages and centres of development antecedent to the adult condition.

The great factory of the blood-cell is the bone marrow and for to-night I am content to say that I subscribe to the view that the leucocytes generally, whether there be other minor centres of origin or not in the tissues, are the ultimate development of the myelocyte group in the marrow, that these again are the differential forms of the large mononuclear cell or leucoblast which forms the chief element in lymphoid leukaemia, and that this in its turn is budded off from the nuclear matter of the myeloplax or giant-cell of the marrow tissues. One other form there is, the so-called haemolytic lymphocyte which originates in the lymph nodes of the body and in the haemolymph nodes of the retroperitoneal and thoracic regions.

The generally accepted percentages of these are—

Lymphocytes and small mononucleas, 25—30 per cent

Large mononucleas, 2—4 per cent

Polymorphs or neutrophiles, 70—72 per cent

Eosinophiles, 1—4 per cent

Basophile large granular or mast cells, 1 to 1 per cent

There seems to be considerable evidence that in physiological states the haemolymph nodes are scanty and seem to play little part in blood formation, but in pathologic states they increase in size and number, and my conviction is that the role of the haemolytic lymphocyte in diseased conditions is not identical with that of the "small mononuclear" and that for purposes of differential diagnosis it will one day be allotted a place by itself in the blood count. It is doubtful whether it is phagocytic as are in varying degree all the others, but it certainly has amoeboid movement to the slight extent necessary to carry it beyond its containing vessel. Now the leucocytes are not only phagocytic, but actually elective in their response to stimuli such as are exerted by the action of specific bacterial energies on the protoplasm of tissue cells. Thus one such stimulus to the great blood-centres will produce a positive chemotaxis upon a definite class of leucocyte. In septic infections or acute general bacterial invasions, e.g., Staphylococci, Streptococci, Pneumococci, or plague bacilli there is an immediate and generous response on the part of the Neutrophile

cells while the Eosinophiles practically disappear from the picture. To deal with anthrax bacilli on the other hand the Eosinophiles are called out these, surrounding the invaders, discharge their granules at them and, retiring, give place to the hyaline macrophages which engulf the now hardly resisting organism. And so in certain forms of asthma and in certain helminth invasions the Eosinophiles may reach a very high percentage. We may have then a "general leucocytosis" as in the presupputative amoebic invasion of the liver where all classes of leucocytes are actually increased in number, or we may have a "particular leucocytosis" only where one variety may be increased, the others remaining normal in numbers, or a "relative leucocytosis" where all but one variety are decreased. This last is easily overlooked.

If, then, we know the normal total and differential blood-counts and realize in addition that the entrance of a certain toxin into the circulation will, according to its nature, virulence and rate of diffusion, call forth from the great Blood-Factory in the bones a specific response—an adequate 'first line of defence' in numbers and constitution—we shall recognize, as experience grows, in the varying differential and total blood-counts certain blood pictures which will suggest different diseases or groups of diseases in each of which the toxæmia is specific and the response characteristic.

It is to a study of these blood pictures that I now invite your attention, though in the search for a diagnosis we may find it necessary sometimes to call for samples of material other than blood.

I have, however, to confess that in such a wide spread practice as mine it has not been found possible to collect all the material necessary for many of the cases. Sometimes for want of a history or description of the case one could only suggest alternative diagnoses. Once or twice slides were wrongly numbered or named in a batch and recummision was my reward. The impossibility of securing a total blood-count or a haemoglobin estimation has proved a heavy handicap, and the absence of a completed chart has frequently proved a disappointment. But the intention of this paper is not to show what has been done by myself, but rather to suggest what help lies within the ready reach of any one of us who will avail himself of the very real assistance afforded by the microscope in the consulting room, and perhaps rather to point out how much, and more than I have myself been able to do, lies within the reach of those less isolated from their patients and assistance. Here perhaps I may be allowed to express my indebtedness to Mr. Stuart Brooke, F.R.C.S.I., the Chief Medical Officer of the East Indian Railway, to my brother officers in the several Districts, and to my own Hospital Assistants for their generous co-operation and patience, as well as to Captain

Connor, F.R.C.S., Civil Surgeon, Gaya, and Miss Mackenzie, M.D., of the Lady Elgin Hospital there, for much material supplied

I—THE PROTOZOAL DISEASES

A—*Malarial Infections*

Of the 928 blood examinations in all classes of "Fever" submitted to me this year I find that in 313 cases the various malarial parasites were demonstrable while in 22 other cases the blood picture, or the presence of melanin pigment in the phagocytes completed the clinical diagnosis. Thus 33·7 per cent of all my "Fever" returns were undoubtedly malarial in nature and 36·1 per cent almost certainly so. This proportion was fairly uniformly maintained throughout the year, though July showed 26·41 per cent only and the last three months of the year a somewhat excessive incidence, October registering no less than 50 per cent of the fevers of that month.

The relative incidence of the various types showed a general rise in each type in the Autumn, Tertian showing its highest curve in August and October, Subtertian in October and November.

These curves agree with those plotted by Prof. Thayer in his article on Malaria in Sir Clifford Allbutt's *System of Medicine* and may be accepted as the common experience.

Of relapses I think Tertian is markedly more frequent, and I put this down to the ease with which a single attack is controlled. One finds Subtertian patients more willing to take a course of quinine, and this year I have been struck with the comparative scarcity of crescent forms. In railway experience it is found easier to fill patients with quinine than borrow pits with earth, and the remarkable fall in the malaria rate which has occurred during the past twelve months in my District is due less to expenditure on improvements than to the liberal and efficient exhibition of quinine as a prophylactic and curative measure. Epidemic malaria has, thanks to a season of level rainfall, been little in evidence throughout Bengal.

In certain of my markedly malarial stations I notice this actual decrease and I recognise gratefully the co-operation of all ranks in the executive departments in bringing it about. The Malaria returns for the second half of 1908, 1909 and 1910, respectively, were—

	"Fever"		Fever		
	1908	1909	1910		
				Mala ria	Other than Mala ria
Europeans and East Indians	48	30	8	14	
Higher Class Indians	248	294	70	67	
Menials	361	550	131	120	
Total	657	874	209	410	201

and I am satisfied that the diagnosis control alone cannot be made to account for the difference. During the past 18 months quinine has been distributed with a lavish hand to all classes of railway employés departmentally through the various offices and subordinate officers. The malaria figures for all Districts should make interesting reading as a direct result of this. Had it been possible to examine all Districts case by case as in Gaya, much valuable information would have been available for our Malaria Bureaux.

The actual blood picture in malaria is very constant and is only simulated in two other diseases in the Tropics, and these are readily separable. They are Kala-Azni and Seven-day Fever. The distinguishing feature of the picture is the very marked relative and actual increase of the large mononuclear leucocytes, and while the leukopenia commonly met with in this disease is rarely a reduction of more than 50 per cent of the maximum normal 10,000, and is commonly less than this, it is the commonest experience to find a three-fold, four-fold or even five-fold increase in the accepted maximum normal (8 per cent) of these cells. The intrusion of this disease as a complicating element in other blood pictures is therefore of interest, as months even after the disappearance of the parasites from the peripheral blood the large mononuclear increase persists.

In the Tropics one must be always on one's guard against this very common and unwelcome complication.

Not infrequently the blood picture in malaria as in other diseases is of value for the warning it can convey. Thus, if one eliminates the persistence of a post-febrile lymphocytosis due to a recent Seven-day Fever, an unusually high lymphocyte count in malaria is often suggestive of a dangerous degree of infection, and some of my most serious cases have given lymphocyte increases up to 56, 59, 52, 60, 51 and 55 per cent respectively in adults. One must not confound this with the physiological lymphocytosis of early infancy and childhood. I have registered a lymphocyte count of 70 per cent and upwards in very young children, and a leucocytosis in such patients, in inflammatory conditions, is, normally, a lymphocytosis.

I do not attach the same importance to a very high large mononuclear count as I have found many cases registering over 30 or 40 per cent which presented no special features.

Very occasionally one meets in the peripheral blood in Subtertian cases mature asexual forms of the parasite, I have seen these twice and in one film a sporulating Subtertian. Such cases generally show an exceptionally high degree of infection and point to instant and heroic methods of quininization as the best chance for the patient. One such case was diagnosed as enteric, and I was just in time to prevent almost certain disaster. There were as many as ten

parasites in a field and three and four ring forms in a few of the corpuscles

Saundice, hepatitis, vomiting even purging, or hyperpyrexia may be met with from time to time, and the microscope is the safest and readiest agent in bringing matters to a satisfactory conclusion.

Sometimes one is told that a patient does not believe in quinine, that he has given it a fair trial, and that it has failed. Gentlemen, there are many fevers in which quinine will fail, but malaria is not one of these. Speaking generally any fever which resists quinine properly administered for more than four days is *not malaria*.

Now and again a true Subterian apparently uncomplicated will prove resistant, but these cases are rare and I have but one to record this year. The patient, who was not under my care, was reported to be getting 30 grains a day and his chart did not give a normal line till the ninth day. I would more easily believe that he did not really get these quantities than that this case proved to be my grand exception.

I have learned to try the lactate where patients cannot take the sulphate or bi-hydrochloride, and I had testimony only the other day to its value from a brother officer. And I have learned that as a prophylactic it is unsafe to the good name of the drug to take 5 grains in the morning to meet the onslaught of a mosquito which defers its attack till the sun is in the west. One hour before sun down seems to me a much more rational hour.

Recently we have had a certain amount of correspondence in the *Indian Medical Gazette* about the danger of the administration of quinine in pregnancy. I have never seen it do anything but good in the doses one gives for malaria in such cases, and the doses taken for other purposes have always seemed to me very large. Let me quote case No. 1222. A certain European woman six months pregnant developed a high intermittent temperature rising daily to 103 or 104°. She was allowed to run on like this till on the sixth day the maximum reached 106 4°. I was then informed by letter and wired for a blood film. Ere I could receive it the temperature rose on the seventh day about 1 P.M. to 110° and receded within 18 hours to 94°. My urgent wish to push quinine reached the house as the temperature was again rising and the result of quinine administration, 5 grains every few hours, was that the temperature came without further rise to normal and remained so. This was over two months ago, and unless she has stopped taking the prophylactic recommended she should presently be delivered without further incident. I insert her temperature chart as it is of unusual interest.*

Cases of spiroulation coma do occur, perhaps less frequently in railway or other official experience than in the country generally. One

learns to be on the look out for such cases, and few are allowed to go to such lengths. Rather in such organized practice as mine one has to be on one's guard not to put all such sudden comatose conditions down to malaria. I am reminded as I write of a case where I was called in consultation. Not only was the lad apparently quite comatose but he had hemiplegia following convulsions. The case certainly looked grave. My friend on a previous visit that day had taken a blood film but had not yet examined it for the malarial parasites he suspected. I will not detain you any longer than to say that a single question to the medical in attendance furnished the expected clue and a good course of Santonin the remedy. Had my friend found time to examine his slide, I have no doubt the marked degree of eosinophilia would have led him to take similar measures, but I should have missed a good object lesson in the place of the microscope in clinical medicine, and that of course is and must always be secondary. One last warning. I have on more than one occasion had Pulmonary Phthisis cases submitted to me as chronic Malaria. As we shall see in dealing with such cases this mistake should not be made even in early cases.

B—Kala-Azai

Pleased as I should have been to include a series of Kala-Azai cases in this paper I am still more pleased to report that I have seen only three during the year. These were verified by spleen puncture and liver puncture, the last in a case where the final complication of diarrhoea had already set in. The other two seen first now more than a year ago, are still with me. But I have had the mortification of seeing a true Kala-Azai sent for change of air to my District as a chronic malaria, and the more recent annoyance of receiving a death certificate of a true malaria endorsed in Calcutta as Kala Azai. I learned that in neither case was a blood examination made except my own. The differential leucocyte count is much like that of malaria.

In this disease a spleen puncture in early cases, and a thick film from the finger with a trial blood-count in advanced cases, is generally sufficient to demonstrate the L D bodies. I have never yet had a regrettable incident and I have punctured many spleens. A few simple precautions are necessary. Early cases only should require this method of examination and the strictest antiseptic precautions should be observed. Thirty grains of calcium chloride shortly before and after the operation should be given, and the strictest rest enforced before and after. Pressure should be kept up for ten or fifteen minutes after withdrawal of the needle. I never use this method if the patient's blood in a Wright's tube does not clot spontaneously within 5 minutes.

* A son was born 14th March 1911.

Perhaps it would not be out of place if I lay before you here a chart of a disease not often met with by up country practitioners, but familiar no doubt to Calcutta physicians I refer to the *Low Fever of Bengal* first described by Ciombie and later by Rogers and others. It presents certain features of temperature and of leukopenia which suggest Kala-Azai, but, except that a differential diagnosis has to be made between the two, it has properly speaking no recognized place as yet in this section.

One such case occurred in Asansol, however, while I was on special duty there, and I am indebted to Dr. Guinness for the opportunity of studying and putting it on record. It has perhaps a special interest in as much as the patient kept a careful note of his temperature throughout and has from time to time advised me of his progress, so that the record is complete.

After carefully excluding Tubercle, Malaria, Amœbic infection—this was found and treated incidentally without affecting the general course of the disease—and other possible diagnoses, I was forced by the blood-count, which showed a leukopenia such as is found in Kala-Azai, to suspect this disease, despite the fact that the case had begun in July. Major Rogers very kindly drew my attention to this condition, however, and as a result our patient was sent for a change to Jamalpur where on a laterite soil the long-standing afternoon rise of temperature at once ceased, and, during his stay there for a fortnight, once only after a long afternoon's golf did it go up so far as 99 the normal level being steadily maintained. On his return to the alluvial soil of Asansol the low fever returned.

On the 10th of August examination of the blood showed 5,316,000 red cells while the leucocytes had already fallen to 3,200 and on a recount 3,300 per cc millimetre. Hæmoglobin 83 differential leucocyte count

Lymphocytes, 17 per cent, Neutrophiles, 72 per cent, Large Mononuclears, 7 per cent Eosinophiles, 4 per cent

The amœbic infection referred to may explain the somewhat high neutrophile percentage. Otherwise the blood picture is characteristic. I should be glad to hear the opinions of others who have had experience of such cases. But time presses and I would refer those to whom this fever is unknown to the description in Major Rogers' "Fever in the Tropics."

C—Filariasis

In Gaya District Filarial incidence is very high and amongst the city dwellers who find their work on the railway one is sure to come upon filaria in the blood at intervals. They seem to do no harm, however, until the adult worm suffers injury or dies, or when a block in the circulation occurs, but every now and again cases appear with symptoms of filariasis which call for recognition and interference. These

naturally present great diversity in symptomatology as in locality, and one may briefly quote a few cases which will fairly illustrate the disease.

Case 77 first revealed *F. Nocturna* in the blood film in February when he complained of feverishness only, examination of the blood showing a normal count. Until July he had no sick report but on the 6th he was brought to my hospital suffering from an intensely tender affection of the shaft of the right tibia with considerable lymphangitis. His blood showed a marked leucocytosis and 88 per cent of neutrophiles. This lasted a fortnight and he then resumed work, but had occasional feverish attacks during September and October. He has not yet any signs of elephantiasis, but these will no doubt appear later on.

Case 352 is a typical case of recurrent attacks of lymphangitis in the left leg. During his last attack in November he suffered mentally and signs of imbecility appeared which have since been recovered from. One wonders whether the filariasis was the cause of the condition which at one time almost decided me to terminate his service. His next attack will be watched with interest. Leucocytosis was marked on each occasion, the attacks three in number lasting each about a fortnight.

Case 1297 gave a slight neutrophile increase with a mild leucocytosis, but save for the presence of numerous *filaria nocturna* in the film no cause for the hepatic pain of which he complained was discoverable.

One case more. This was a man who complained of an intense pain in the right frontal eminence with swelling and tenderness. His film showed large numbers of *filaria*. Leucocytosis was very marked. Recovery was complete, although the treatment was palliative only.

D—Amœbic Infections.

I was present at the discussion on the presumptive phase of Amœbic Hepatitis in this room last July, and the information I then carried away has been of considerable value in the recognition of a class of cases which till then had been but dimly discerned and certainly not grouped in my mind. I have said that I keep a careful index of names in my register, and I am now therefore able to show that in the early part of the year I more than once failed to appreciate the inner significance of some of my blood pictures. Some of these cases are isolated in my books. The films came from other than my own practice and I have no further record of their progress. Others in the course of months appeared in judgment against me, and, if I was still able to correctly diagnose and successfully treat them at last, satisfaction is denied me when I think of the months of discomfort and misery I might have saved.

I refer then first to a group of cases where the only symptoms were frequent malaise, perhaps a little diarrhoea or liver pain and recurring attacks of fever of longer or shorter duration at intervals. I find that none of these cases came before me personally, a total blood-count was not obtained at the time and the slight degree of leucocytosis present was not always remarked in the film, or at least in the register. The blood picture was in most cases a normal one showing polymorphs 74, 74, 71, 76, 69, 66, 62% but a definite, though not marked, leucocytosis was in the

majority of such cases actually noted. The duration of the condition, generally a fever showing an evening rise, was not always stated, but in some a history of weeks was obtained, in one, two months, in another, five months, and in yet another, seven months. Men in railway service are shy of reporting sick too often, and so the fever history is often incomplete. But the blood pictures are fairly consistent.

Sooner or later these cases would reappear amongst my samples, and then perhaps a definite leucocytosis or the mention of hepatic pain would serve to point to the correct diagnosis. The patient would be called to the headquarters hospital, the stools examined, the blood counted and a course of Ipecac initiated with the most gratifying results. Nowadays I am at once suspicious of a fever showing a normal differential blood-count with a maximum normal leucocyte enumeration, and when I meet with a case of doubtful fever recurring against one man's name I send for him. Regrettable incidents in medical practice are thus sometimes avoided. So well do I appreciate this now that on one occasion when I recognized this condition in a film sent to me with the simple history of intermittent fever for two months in a European, I wired the Medical Officer in charge of the case to put the patient at once on full doses of Ipecac. To my extreme mortification I learned that he was already on his way home on sick leave. I have not heard whether he developed a tropical abscess or not. His film gave a normal differential on an 800 leucocyte count and a marked leucocytosis.*

Case No. 493, a similar case, later developed dysentery of the amoebic type and therewith hepatitis. Treated with a full course of Ipecac in July he has remained in good health up to date.

A very typical case is No. 23. He first came under my notice in January with a history of chronic fever for a month past. His blood film I reported "Negative". In July he complained again of fever in the evenings and yet again in August. In September an attack of hepatitis led me to examine him myself and since then he has had no trouble. I could get no history of dysentery from him, but I induced constipation and then found the amoeba of Schaudinn in the mucus of the next stool passed. One peculiar feature of this case, as also in case No. 1225 to which I shall presently refer, was the occasional incidence of a high large mononuclear count, his successive readings under this head being 16, 6, 5, 13 per cent. This led me to a very thorough and always unsuccessful hunt for malaria, and quinine administered as matter of course by my out station assistant did not affect the temperature. Major Rogers has informed me that he too has noticed this in presuppurative leucocytosis in such cases.

So also case 103 with loose dysentery stools and a temperature of 102° give a reading of lymphocytes 17, large mononuclears 13, neutrophiles 69, eosinophiles 1 per cent, and here the leucocytosis was not marked, while I could not learn of a malaria infection previously or concurrently.

Case No. 314 has the same history and course. This film was returned in June as "Negative". Unfortun-

ately I did not learn for some months that during June and July he suffered from dysentery or intermittent diarrhoea and constipation. He came on the sick list on October 29th with a diagnosis by my assistant of "continued fever probably enteric or paratyphoid". His little son had just recovered from paratyphoid. The blood count gave a reading of lymphocytes 25, large mononuclears 15, neutrophiles 60, eosinophiles less than 1 per cent. The leucocytes were little if any in excess on the film. He was put on full doses of quinine, though parasites were not found, and in a few days the temperature came to normal. Ten days later it went up again and this time his blood picture gave leucocytosis 10,500, red cells normal, lymphocytes 17, large mononuclears 12, neutrophiles 69, eosinophiles 2 per cent. Still I did not recognize the condition, but in a few days he showed signs of hepatitis. A fresh count was made, and this time I obtained the dysentery history and verified it by recognizing the amoeba itself. Leucocytosis was 28,747, 1 white to 174 reds, and I was now for the first time on the right track. The fall of the temperature under a full course of Ipecac added yet another to my list of amoebic fevers stopped short of abscess. This occasional association of a large mononuclear leucocytosis with presuppurative fever is to be remembered.

In October last I happily recognized three dysentery cases in Lulu in Europeans during a visit there, and two of these have reported to me since a definite return to health after a month of Ipecac treatment. I have no record of the third.

In my own station to day is a young gentleman who has had recurring dysentery attacks for 18 months before coming under the continued influence of the drug at my hands and I am happy to say he is at last in perfect health.

Such then is the blood picture in amoebic fevers, a normal or practically normal differential blood-count with a maximum normal or slight increase in the total leucocytes, rising to a maximum in hepatitis in its presuppurative stages of say 20 to 30,000.

But there comes a time where the presuppurative stage merges into the suppurative and one is sometimes asked to say whether the line has been crossed. Two cases will illustrate this.

Case No. 1223 is perhaps better known to some surgeon present than to myself. His blood film reached me on the fifth of November from another district with the simple hint "T 100° vomiting and diarrhoea". The differential count gave lymphocytes 7, large mononuclears 12, neutrophiles 80, eosinophiles 1 per cent, with an evident leucocytosis. I diagnosed probable liver abscess and was quite recently informed that the patient has been successfully operated on in a Calcutta Hospital for the same and had made a good recovery. Here my instincts were right.

Case 1135 is not, however, one of my happiest recollections. If Major Rogers will just nod his acquiescence when I ask him whether one of the three cases of imminent liver abscess formation sent from long distances to be operated on in Calcutta, and cured instead by Ipecac—he describes those in his second Edition—was a young English fireman from Allahabad, I shall reciprocate his confidence by confessing that I was the fortunate physician whom he assisted so materially. I had not then done special work in blood study. It will, I fear, grieve him the more that I have to night a second offence to admit, and this time, indeed, I sinned against both grace and light.

As before this case was reported to me from one of my out stations by blood film, description "fever" only—and my report was "negative, not malaria". This was in April. It so happened that I had to relieve another

* This case did prove to be one of amoebic dysentery and the patient had a recurrence at home. He is now on Ipecac.

officer elsewhere between October 13th and 27th, and on my return to my laboratory found a generous pile of specimens which had meantime accumulated. It was not till November 2nd, that I succeeded in overhauling them all, and one of the very last proved to be a blood slide taken on October 14th from this unfortunate person. A differential count gave Lymphocytes 14%, large mononuclears 1%, Neutrophiles 85% and eosinophiles 0%. Leucocytosis was so marked that I estimated it roughly as nearer 30 than 20,000. This was serious. I already decided that if the man was still alive he must have developed a large liver abscess, though the brief note accompanying the film said only acute hepatitis. It was written nearly 3 weeks before I wired for the patient and he arrived on the 3rd in the afternoon. I gave him 30 grains of Ipecac in salol coating straight away and his temperature rose that night to 104°. He was very restless, and in great pain, the very weight of the bed clothes seemed too much to bear. Next day his temperature ranged between 100° and 102 2°, and I arranged to aspirate the right lobe next morning. On the third day he was again 100° at 6 A.M., in spite of a second 30 grains of Ipecac the night before, and

I aspirated at
9 30 A.M., just 2 oz 6 drs of beauti-
ful red blood. When he was put back to bed at 10 A.M., his temperature, think of it, gentlemen, was 98 4°, and save for a rise to 100° on the 4th and 5th evenings it has been 98 4° from that day to this. And that man left hospital on the morning of November 12th with a generous supply of keratinized Ipecac pills vowing I had saved his life! Sometimes when a strange feeling of goose flesh creeps over me I know that I have seen and shall see to the last day of my life that aspirator bottle and its thin red stream. Why did I forsake my faith even if the neutrophiles were 85%, the leucocytosis extreme, and the blood film 3 weeks old? To think of it, if only I had waited one little hour more! Thereafter the large mononuclears rose to 17% falling to 12% on the 10th November when the leucocytosis was quite gone.

Abscess of the liver appears in my register four times only. One case I have quoted. In the other three, all of which occurred in the practice of others, blood films were submitted for opinion and the diagnosis confirmed later.

Case 481 showed a high degree of leucocytosis with a differential blood count of 94% neutrophiles. This is unusually high.

Case 500 died soon after the film was taken and the abscess ruptured below the diaphragm. Neutrophiles 88%.

Case 966 was aspirated on receipt of my report and half a pint of stinking muddy pus removed. This also terminated fatally. In this case there was probably a secondary septic infection. Neutrophiles 82%.

Of the four, one occurred in a Eurasian, two in native males and one in a native female.

Thus all classes of amoebic fever have been represented and the lessons they convey well enforced. These are, bear in mind the possibility of amoebic infection in all doubtful cases of fever whether of short or long duration, verify the diagnosis if possible from the stools, never neglect a total and differential blood-count, push Ipecac till all chance of a recurrence is gone, and, the lesson that will remain with me most vividly, *In all doubtful and less than doubtful cases of abscess give the Ipecac a chance*.

This last lesson may serve also in the numerous cases of dysentery which one meets

in common practice I mention this because two gentlemen, who have received the diploma of a certain well-known school, have recently suggested that the views of treatment I hold are not matters of conviction with them. In one case where after examining the blood I strongly urged the free use of Ipecac in a severe hepatitis, I was later informed that the patient could not stand Ipecac, and had pulled through on calomel and ammonium chloride. I take leave to suggest with all deference that this case will relapse. In the other case it was suggested that there are two schools of opinion about dysentery treatment, and I ventured to disagree with the statement. Where the dysentery is demonstrably amoebic the treatment must be Ipecac, where the dysentery is as demonstrably bacterial the saline and serum treatment is as imperatively indicated. Amongst pathologists on this subject there are no two schools, in India at least, there are but two lesions and each has its appropriate aetiology and treatment.

II — THE ENTERIC GROUP OF FEVERS

The nomenclature of diseases is still in the making, and I am inclined to suggest that it had been better to reserve the name Enteric for a class of fevers which present many features in common, though varying in degree of intensity and persistence, extent and variety of lesion, and complications. Some are of undoubted specificity, and, of course, others vary in the causative organism, but run similar courses.

The enteric group of fevers may be differentiated in many ways, by the duration of the attack, by the characters and distribution of local lesions, by the name of the specific organism or associated group of organisms, by the recognition of certain toxins. Yet all possess certain features in common, and I can only suggest these to-night for the most part without going deeply into a subject infinitely complex in itself and outside the scope of this subject for the most part.

Bacterial activity in the intestines it would seem from recent work done on the intestinal flora varies not only climatically and racially and according to the age and diet of a given individual, but also in any one individual seasonally. In this last fact we have perhaps the explanation of the periodicity and cyclical recurrence of certain specific fevers, and during the late summer and autumn months we find bacterial infections of the intestines especially common.

I shall shew a series of blood-counts to illustrate these intoxications, beginning with the less severe, but the points I would bring home to you are that the fever in all cases is due to an intestinal intoxication, and that the toxin or toxins produced by specific invasions determine the symptomatology, course and duration in each case, and I would remind you that the

Invasion passes always along the line of the frontier forts first, the Peyer's patches, agminated and solitary glands, to the mesenteric and lumbar groups. In these we have, as I have shown, a secondary leucocyte factory, and it is here that so long as they are not overborne by the virus an increased production of lymphocytes or lymph corpuscles takes place. We shall expect then during the early stage and even at the stage of resolution after prolonged attack to find in our differential leucocyte count a definite indication of the presence of such an intoxication, unless we have to deal with a case where a secondary septic or putrefactive infection masks or suppresses this and gives us a picture of inflammatory mischief instead.

Much of what I have to say is at present conjectural, *post hoc propter hoc*, but the observations I have made in these enteric infections have led me to suspect that the large majority of the colon group are capable of so acting upon the mesenteric and lumbar glands as to give a definite blood picture. One constant feature of these short enteric fevers and of the early and late stages of the more protracted varieties is constipation. This, I believe, to be due to the toxins of the organisms exercising a depressing and inhibiting action on the muscular armature of the intestinal wall, the succeeding diarrhoea of the grave infections being rather the direct result of the ptomaines or albumoses formed in the putrefactive process engendered by the stasis.

The poisons of the typhoid, *coli communis*, and Gaertner's bacilli are typically intracellular and also excretory, and from the spleen of persons dead of typhoid fever albumoses in fair quantity can be obtained. The toxin may be extracted, says Sidney Martin, when the splenic pulp is rubbed through wire gauze and filtered after being treated with an excess of normal salt solution. The injection of the filtrate into rabbits has been found after a period of incubation to cause a great fall of temperature with collapse and profuse mucoid diarrhoea. Gaertner's bacillus and the *coli communis* organism toxins behave somewhat similarly. Martin concludes, "The mode of action of the toxin of the bacillus *coli communis* is more irregular than that of the poisons of the other bacilli not only as regards the lethal dose but also as regards the irregular kind of fever and after-fever produced." When, however, we consider the motley group of organisms which are collectively called *bacillus coli communis*, this statement of his finds an easy explanation.

Examining, then, unclassified fevers of short duration in this enteric group, we find that especially during September and October, but generally through the second half of the year, we are constantly meeting with fevers of one day, two, three or four days' duration, which present a definite family likeness in symptoms and in their blood picture. The attack is sometimes ushered in with a definite rigor or

even series of rigors, but in the simpler cases this is not a feature of the infection. Headache, slight pains in the limbs and body with constipation are the clinical features and the temperature rises in the evening to 100 or 101. Treated with a smart purge, the case promptly recovers to relapse again weeks or months after if no change in the habits and circumstances of the patient has been made. These cases last generally two to three days, but may extend without any very definite severity to a week or more before assistance is sought. In some patients tolerance of the albumose seems to be established and constipation with slight feverishness is sometimes complained of as the only sign of ill-health, or the temperature may rise for one night only, and such cases are casually returned as "Ephemeral Fever" or "Malaria."

My attention was drawn to this very large class of cases by the typical blood-count and the invariable history of constipation. I have a very large number of these counts and their characteristic is the high lymphocyte percentage with a compensating neutrophile decrease. I find the lymphocytes are over 40 and the neutrophiles under 50, or, practically speaking, about 45 per cent each of the total leucocytes.

The total blood count shows if anything a slight leukopenia.

I have seen fifty or sixty of these counts, always associated with the same train of symptoms and varying very slightly in any single case from the average. The large mononuclears rise to a maximum normal only as a rule. Quinine has no effect, save to increase the headache. A simple smart purgative clears the case up at once. Nausea is not often complained of, but I have seen bilious vomiting in one unfortunate who got 160 grains of quinine before his blood film was submitted to me. These cases may be called "Constipational Fevers," but I consider them specific and due to *coli* intoxication of a mild nature. The term "Copriastic Fever" is perhaps most correct.

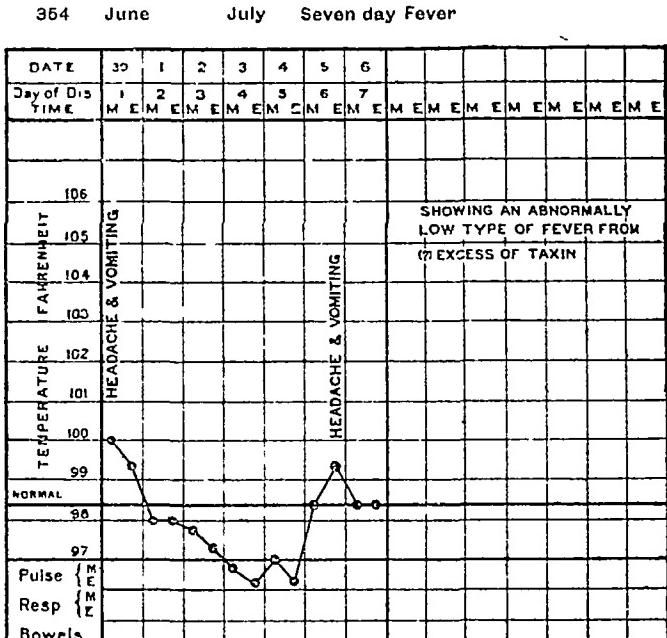
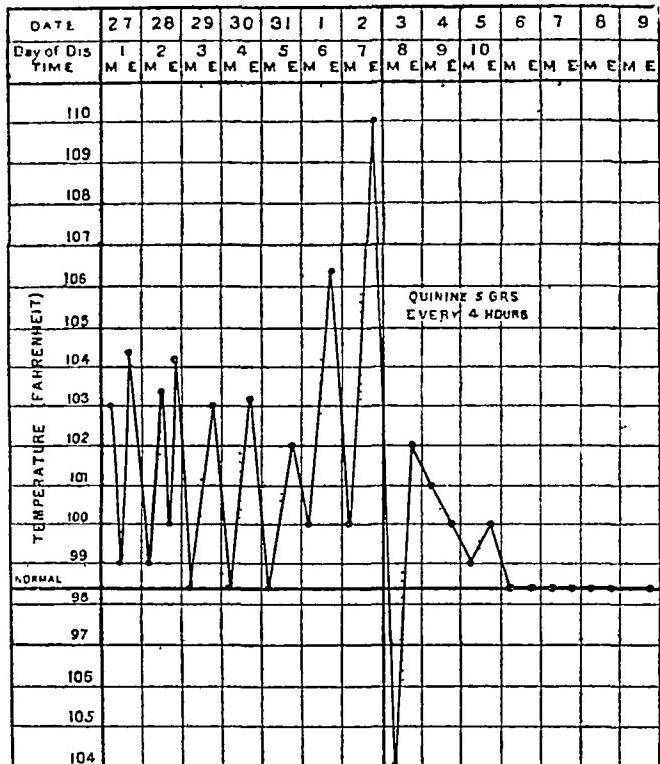
The next class is like this, but the fever is higher, running for four days, and intermitting between 103° and 99°. The onset is sudden, invariably associated with a rigor or series of rigors; the face and body generally are flushed and the skin is hot and dry, the eyes are suffused and injected, the tongue is thickly coated, with red tip and edges, and constipation is severe. Pains all over the body are complained of, but especially in the back and limbs. Many patients describe the former as "lumbago." On the 4th or 5th morning the symptoms clear and convalescence is ushered in with the return of the skin and bowels to activity. It is, however, slow and great prostration is invariable.

The blood count is as in the last class exactly, so that for a time I was unable to differentiate this, which I believe to be specific intoxication by a definite member of the *coli* group, from the less severe and possibly more general infection.

HÆMATEIKONA THE SIGNIFICANCE OF THE BLOOD PICTURE IN DISEASE

By A. WHITE ROBERTSON,
Dist. Medical Officer, E I Ry., Guyana

1213 Oct Subtertian Malaria Nov



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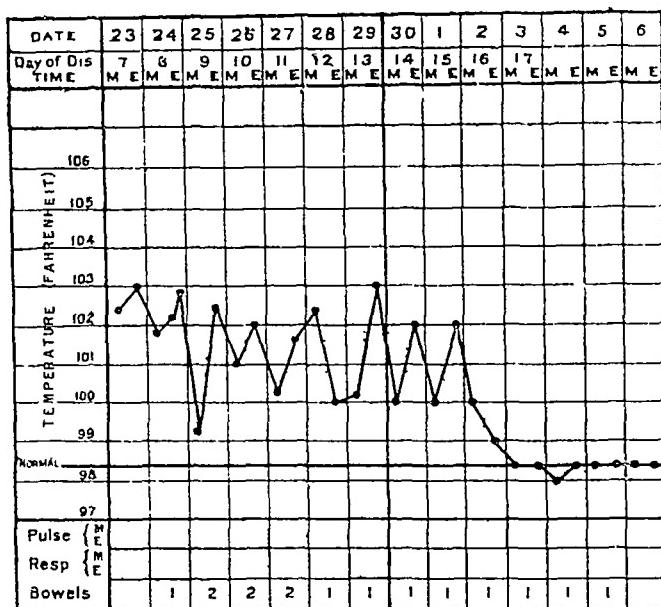
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992 Sept Paratyphoid A Oct

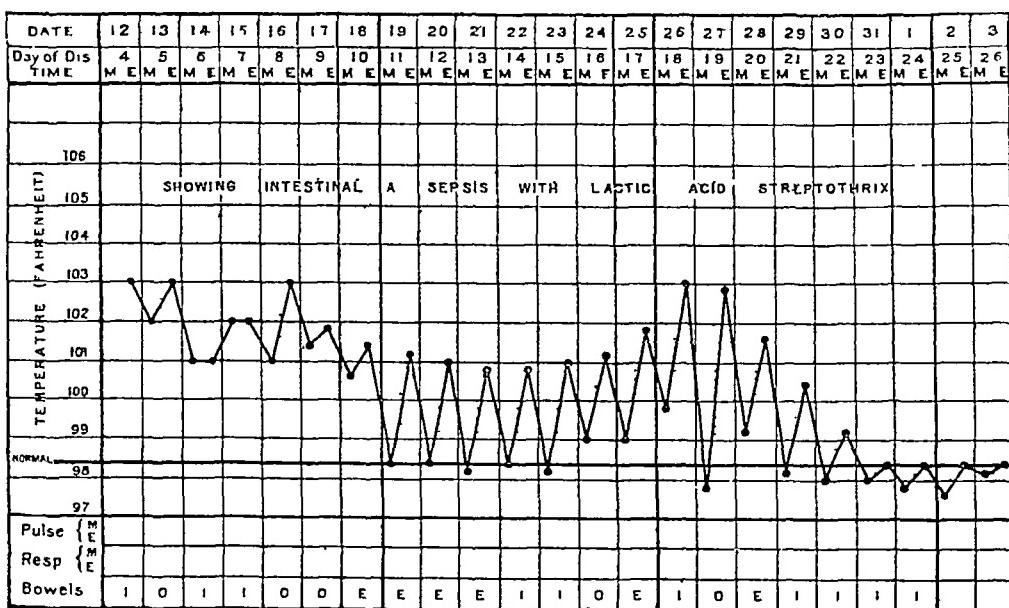


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of that indefinite congeries. Towards the 3rd day the lymphocytes decrease and the large mononuclears are much increased.

Coming now to the next number of the series I agree with the author of "Fevers in the Tropics," that the fever he has described as Seven-day Fever is probably but another of these specific coli infections. Here, again, associated with the common symptomatology is the typical high lymphocyte count of the enteric group of infections with, however, a more lasting blood picture. I have blood-counts in this condition which show over 60 per cent lymphocytes during the last three days of the attack, and for a fortnight after it in one case I had an opportunity of examining. In the stage preceding this, the large mononuclears are also relatively increased. From the blood of one case I have isolated a motile organism of the *coli communis* type.

Still further extending our knowledge of this interesting series, we meet with definite infections of 14 to 15 days' fever, in which we find *Paratyphoid bacilli* of Schottmuller and closely allied organisms. These present a definite entity as does typhoid itself, and I show a few typical charts. These cases gave a high agglutination figure with the laboratory stock culture indicated in each case, and with one exception showed a high lymphocyte count plus an increase of the large mononuclears.

My collection of *Enteric* charts and blood-counts during the year fittingly closes the series.

Case 646 was one of a family of four who contracted typhoid from the cook. The blood capsules were sent to me in July and all gave a positive Widal reaction and the course of each fever was uneventful. In August I examined the blood film of one of these, a little girl who showed a high intermittent temperature for four days, shortly after the temperature had come to normal and from the leucocytosis and differential count, which gave lymphocytes 11 per cent and neutrophiles 81 per cent. I diagnosed acute septic infection. This was confirmed by the rupture of a middle ear abscess through the tympanum, and the case terminated without further delay.

Case 1202 is of special interest. In a case which clinically was typhoid, one had almost said unmistakably typhoid, the blood count was atypical and Widal negative. I was disinclined to admit the diagnosis until I had seen the patient, but thereafter was satisfied. Towards the close of the first course the blood remained atypical, and still the Widal was negative. The anticipated relapse duly occurred with some leucocytosis and an increase in the neutrophiles, rose spots reappeared, and throughout this period also the blood examination showed no return to type. At the end of the eighth week a bullous dermatitis appeared, became pustular, and threatened to prove serious but the patient got over this also, and after an interrupted and prolonged convalescence left his bed at last to go Home to England, my last film showing lymphocytes 47 per cent, neutrophiles 49 per cent. I have never seen a relapse where this differential count appeared at the end of the third week. In this case the putrefactive organisms prolonged the case, obscured the blood picture, and nearly determined a fatal issue.

The exact differentiation of these minor and major enteric fevers will demand much work,

but they ought not, even in the present state of our knowledge, to be confused with other infections if the blood examination in fever cases is made matter of routine.

After careful scrutiny of the blood-counts in the enteric group and of the autointoxication series which I shall presently describe, I am inclined to believe that we have to deal with definite toxic conditions which, though the latter sometimes follows upon and masks the first, are yet capable of differentiation. The lymphocyte picture of the enteric group is the normal result of a specific co-related group of albumoses and the constipation which is a feature of the attack is one of the normal results of their action. When diarrhoea supervenes I believe it is due to the toxin poisoning which is the result of the activity of putrefactive organisms, aerobic and anaerobic, set up by this condition of intestinal stasis, and the polymorphonuclear leucocytosis of autointoxication has its equivalent in the change in the enteric picture which occurs during the second week while putrefaction proceeds, when the neutrophiles are increased at the expense of the lymphocytes. In the third week of an Eberth-Gaffky infection I am accustomed now to look upon a return of the blood picture to a relative lymphocytosis as of favourable prognostic import, and it is worth remembering that in fatal cases it is the rule to find diarrhoea a prominent symptom.

I am able to show a Typhoid Fever temperature chart which illustrates this inasmuch as the case was kept throughout on *dahi*, the Indian milk curded by the *streptothrix dahi*, first, I think, described by my friend Dr G C Chatterjee. This chart goes some way to support my contention that the diarrhoea, high fever, delirium, etc., of the middle stage of an ordinary case are independent of the endotoxins of the bacillus of Eberth, but are the result of the putrefaction changes induced by other intestinal flora. The patient never had a clouded day throughout save only for a few days when soups were added to the diet, and convalescence found her very little reduced by the long term of fever. I believe that with the aid of the lactic acid producing *streptothrix* and the glycerine enema we can rob typhoid fever in most of our cases of half its terrors. I know no intestinal infection whether bacterial dysentery, paratyphoid, or enteric major which will not immediately respond to its exhibition in a marked way. Its influence in 'holding up' putrefaction is unique, and I would as soon omit the lactic acid bacilli in the treatment of intestinal intoxications now as I would omit Ipecac in amoebic dysentery, or quinine in malaria.

With such an ally to hand, I blame myself if by its omission in a case the specific enteric symptoms have added to them those of intestinal putrefaction.

What the increase of large mononuclears in the enteric group of fevers signifies I have not determined. It seems to precede the relatively lymphocytosis of the later period, but I have in Typhoid Fever had large mononuclear counts of 14—15—15—18—11—15—12—10—19—9—13—9—11—and 8% without being able to trace any history of recent malaria, and I cannot think this increase is peculiar to the Seven-Day Fever of Rogers. I have already referred to its presence in some dysenteric cases. For convenience of reference, I have tabulated these counts on another page. But the increase is probably chemotactic, while on the other hand, the lymphocyte increase is mechanical.

Time presses, or I should have liked to discuss other bacterial invasions of the intestines with their blood pictures, but I shall pass on to discuss a class of infections which cannot be excluded from the daily routine of fever cases, and which in themselves frequently present difficulties in recognition which the microscope is best qualified to remove.

III.—SEPTIC FEVERS

One may at this hour dismiss with a brief notice those cases where an opinion has been asked on the causation of the more chronic forms of inflammation of joints, of serious membranes, and of what for convenience sake one may still term "Cold abscesses."

From the knee-joint I have cultured gonococcus more than once in this series, besides other pyogenic organisms, from the pleura, pneumococci and streptococci. Cold abscesses have yielded pure cultures of Friedlander's bacillus, B. Fusiformis and B. Tuberculosis.

ACUTE SEPSIS

A General Septicæmias are represented in my year's cases by puerperal septicæmia, general toxæmia in a case of carbolic acid gangrene, a food poisoning case with diffuse rash, a case of plague septicæmia, and one of fatal erysipelas.

These together illustrate the more acute and fatal forms of bacterial intoxication, and present, with a very high degree of leucocytosis, a differential blood picture in which the neutrophiles run from 90% upwards. The 1/12in field is at times full of them, and I have counted as many as 37 in the body of the film, and 63 at the edge, in a single $\frac{1}{2}$ in field. Myelocytes of all varieties are present, and the nuclear development of the polymorphs is in all stages.

Even where there is coincident and extensive glandular involvement the mononuclear and lymphocyte response is either negative or slight, overborne as it is in the rush of the myelogenous granular polymorph.

B Next in series come the "Pneumonias" with a picture which is practically identical with these except in small children where the lymphocytes are still a feature of the count.

Case 534 is of interest. I reported this blood film as "Pneumonia" on the first day of the illness on the

differential count alone while the physical signs were not recognized for 36 hours later.

C In Abscess formation a very definite leucocytosis can be recognized from the film alone, the neutrophile percentage varying in my list from 80 to 94%. Liver abscesses gave readings of 94—86—82 and 80%. In the second of these the abscess had already escaped below the diaphragm and the patient died that afternoon. She had been only a few days in hospital. The pus was already foul smelling and septic.

I am watching a man just now whose blood film reached me quite recently. He is a European, a heavy drinker for many years, who has complained of occasional attacks of fever. His blood count shows a marked leucocytosis with 87% polymorphs, and I strongly suspect multiple liver abscess. I cannot, however, obtain his sanction to a personal examination.

D Case 1207 is of unusual interest. This patient stopped at Gaya to consult me for a feverish attack which had commenced with a rigor about 4 A.M. on his journey up country. He was still suffering from fever with slight shiverings and explained that he had had similar attacks before, and that a dose of quinine and a day's rest were all that was necessary to put him right. On examining his blood film I found a definite leucocytosis and a differential count of neutrophiles 91%, lymphocytes 3%, large mononuclears 6%, eosinophiles 0%, in a total enumeration of 800 leucocytes. Suspecting abscess formation I examined him afresh and found inflamed lymphatics leading from the perineum to a small but inflamed and tender gland in Scarpa's triangle. I passed a sterilized silver catheter up to the neck of the bladder and on withdrawing it found pus in the eye, and along the catheter.

This was inoculated into Wertheim's medium together with the centrifuged deposit from the first two ounces of urine which I next collected. These cultures gave the characteristic growth of gonococci and microscopically the films from the catheter and the centrifuge showed the same organism. The urine was alkaline of sp gr 1024, and gave the typical reaction for pus. The attacks have occurred at intervals, always associated with foul smelling urine since the patient suffered from an acute infection of gonorrhœa twenty two years ago. The first attack lasted three months, and was complicated by recurring episodic strictures until on the last occasion the catheter entered and evacuated a prostatic abscess. The patient has now gone home and will place himself under expert treatment for the condition. The case afforded me a valuable lesson on the danger of accepting a layman's diagnosis, and confirms what has been written as to the chronicity of the infection in this region.

In the course of examining the urinary deposit in a case of hematuria from suspected renal calculus I was able to isolate and culture this organism eight years after the attack. Its persistence was wholly unexpected by the patient.

In yet a third case the pus aspirated from a knee joint gave a pure culture of gonococci.

Without microscopic examination it seems impossible to diagnose these cases, or to place our patients under the treatment which can alone bring about a radical cure.

E Not infrequently one meets with a case of Phthisis which comes under observation late on account of "Fever and Debility," and the blood picture of the last group of cases is repeated. In 5 such cases which I have examined the average neutrophile count is 82 4%, and at this stage the eosinophiles which at an earlier period are inclined to be rather in excess, are reduced to 1% or less. Similarly in serofulous glands the eosinophile count drops from 8 to 20% down to 1% on the advent of suppuration.

F There exists, though I cannot find elsewhere a description of the blood condition, another infection which gives very much the same picture as the classes just described I refer to the *Autointoxication* which occurs intermittently in the subjects of chronic constipation In the first few cases I encountered the history was generally incomplete and wanting in detail In one case it would be "Fever for two days, constipation," in another "Fever only" It is only after accumulating a large number of cases and after much corresponding examining of sick certificate counterfoils, and interviewing patients that I have been able to read into these blood-counts the story of intestinal toxæmia

I need not describe these cases in detail The fever as a rule is not high, 100°—101.6°—and it comes on in the evenings with headache, lassitude and the general symptoms of the condition familiar to us all In cases of long standing the blood picture includes anaemia which is of the secondary type Some myelocytes are seen and normoblasts, and the usual untidy, fragmented distorted and unequal picture of intoxication anaemia is accompanied by a definite leucocytosis in which the polynuclears average 82% There is marked deterioration of both erythrocytes and leucocytes, "shadow corpuscles" of both varieties being common

I have collected thirty-two of these counts and in each I have been able to trace clinically, sooner or later, the familiar features of the disease This condition is so common that it is easily overlooked, and as my register shows, frequently alternates with the more specific infection by one or other of the coli organisms described under the Enteric group as "Coli Intoxication" or Copræmic Fever There is some evidence to show that in the distended, sacculated, inert large bowel of such cases the conditions during constipation-stasis closely resemble the steps which succeed each other in the septic tank Such oxygen as exists in these is first taken up by the aerobes and a scum forms beneath which the anaerobes continue the destruction of the proteins in the fluid, until, with the exhaustion of the pabulum, the process comes to an end This accounts for the short fever period in some autointoxication cases

At the other end of the series are the Ephemerous or one-day fevers These present a variable picture, at one time showing a coli-infection lymphocyte figure, 40% and over, and yet again a septic neutrophile leucocytosis

Thus, case 554 showed a differential blood-count on August 8th in which the feature was a marked relative lymphocytosis, while his blood picture five days later gave lymphocytes 7%, large mononuclears 6%, neutrophiles 87%, leucocytosis marked His fever had run an intermittent course, and when on the latter date he complained of abdominal pain and distension, Magnesium Sulphate was given, and the fever and other symptoms at once cleared up

Intestinal Fevers form a considerable percentage of cases returned yearly as malaria I would like to see more magnesium sulphate used in our dispensaries than I do We could then cut down with safety our quinine expenditure and our statistics would improve in proportion

IV — EOSINOPHILIA

I do not propose to go into this part of my subject at any length to-night, contenting myself with a general view of the class of cases which have furnished me with the highest counts

Asthma of the chronic catarrhal type easily heads the list with percentages ranging from 21 to 84

Ankylostomiasis has given readings up to 30 per cent

Threadworms come next with 50, 36, 32, 28 and 25 per cent

Tubercle in non-suppurating glands 25 and 20 per cent, and in early phthisis occasionally the figure reaches 12 per cent

In 6 cases of "Filariasis" I have not found above 6 per cent, this is not in accordance with the usual teaching, but these films were taken by myself about 10 P.M. during an acute stage of the disease in each case The percentage usually recorded is much higher

Herpes gave 36, 15 and 11 per cent, while diffuse psoriasis of 20 years standing gave 8 per cent only

Autointoxication cases frequently gave high readings when the neutrophile count was below 80 per cent or so, e.g., 18, 18, 11, 11, 11 per cent, whereas the eosinophiles generally disappeared from the peripheral blood when the neutrophiles rose to 85 per cent and upwards

In acute gonorrhœa eosinophilia is marked in the early stages of urethral infection, one of my cases recording on the 2nd day of illness 36 per cent This disappeared later, the normal count being restored

In the diffuse rash of a general toxic poisoning the blood count showed one day leucocytes 21 per cent, large mononuclears 9 per cent, neutrophiles 51 per cent, and eosinophiles 19 per cent Twenty-four hours later when the patient was in worse case the count was lymphocytes 7 per cent, large mononuclears 1 per cent, neutrophiles 88 per cent, eosinophiles 4 per cent, a true general septæmic picture

Ewing sums up the knowledge we possess of this cell thus —

"The writer believes that all the phenomena connected with general and local eosinophilia can best be explained by the same chemotactic principles that are known to control neutrophile cells From the observations on eosinophile cells in gonorrhœal pus, in cutaneous and serous exudates, and in the blood, it appears that inflammatory products attract these cells at one stage and neutrophile cells at another and more acute stage

"The most comprehensive view of the significance of eosinophilia is that of Neusser and his pupils who from extensive observations have found evidence that the supply of eosinophile cells in the blood is controlled by the sympathetic nervous system and that eosinophilia is the expression of sympathetic nervous irritation. This irritation they believe may proceed from the generative organs, ovaries, uterus or prostate, disorders of which with their related neuroses are usually accompanied by eosinophilia, from the skin, diseases of which have furnished some of the best examples of eosinophilia, from the intestines, from which the toxæmia of intestinal parasites and that of gout, which Neusser regards as of intestinal autotoxic origin, give rise to marked eosinophilia."

I have now covered the canvases allotted to the four large groups of leucocytes, the large mononuclear pictures of the Protozoal infections—the lymphocyte picture of the enteric group—the neutrophile picture of the acute general infections of septic or putrefactive nature—and lastly that of eosinophilia, the most fascinating, as it is the most perplexing of these sketches. If I have shown that even amongst the stress and press of daily practice much can be learned by a brief visit to the microscope which would otherwise call for long and detailed clinical notes, and that we owe to our patients the little extra time it claims in doubtful cases, I am content. The study of disease in the blood, sputum, urine, etc., of the sick is the most engrossing and fruitful hobby that can be imagined, and when one reflects on the suffering and disappointment one can save by its prosecution, I feel sure you will agree with me that it is worth all the extra work it entails.

In conclusion, I should like to refer to the method I employ in making a differential blood-count. I adopt the principle of counting across the smear at different points leaving out the two ends and not counting along the edges. I have handled over a thousand blood films in this way, and while I count 250 leucocytes as a rule, I find it just as easy in leucocytosis cases to count 500 or even 800. Hundred by hundred I write down the results, and it is my experience that the blood picture is practically the same in each, though in successive hundreds slight variations occur. This brings the blood-count as an aid to diagnosis within the reach of the very busiest clinician as it rarely takes more than ten minutes to count a hundred in an ordinary slide. For purely statistical counts I agree that a very large number should be counted, but it would be wrong, I think, to insist upon this and so rob the consulting or practising physician of a most useful weapon. Especially in the sepsis and eosinophilia groups I have described valuable information can be obtained by what one well known writer has indignantly called "random sampling".

It is an excellent plan for beginners to stick to one stain, as the better a slide is stained the easier is it to recognize change in the blood cells, and no blood examination is complete which does not take account of morphological variations in cytoplasm, granular staining, vacuolation, and so forth. For routine work I employ Giemsa. It is easy to use and the results are very level and good.

The differential blood-counts attached may prove of service to those who have yet to make a beginning in the study of the blood picture in Tropical Fevers.

THE MINOR ENTERIC GROUP OF FEVERS COLI INFECTIONS

Lasting one to four days only

Symptoms—Fever rarely running above 101°, occasionally ushered in with rigor in the severer cases frontal headache, pains in body generally, furred tongue, constipation, rarely cough or nausea. No vomiting. Liver and spleen normal.

Blood Counts

MONTHS	Serial No	Lymphocytes	Large Mono nucleas	Neutrophiles	Eosinophiles	REMARKS
July	377	47	8	39	6	
Do	108	42	4	51	0	
Do	412	45	11	10	4	
Do	444	45	8	17	0	
Do	448	46	9	38	7	
Do	492	46	10	42	2	
August	527	42	4	50	4	
Do	675	47	11	30	3	
Do	701	39	9	53	0	
Do	758	36	7	54	3	
Do	693	42	6	48	4	
Do	828	43	10	40	7	
September	972	44	7	40	9	
Do	975	44	8	47	1	
Do	977	43	7	43	7	
Do	1040	39	6	46	9	
Do	1036	49	8	31	12	
Do	1044	49	4	41	6	
Do	946	38	4	55	4	
Do	890	36	4	60	0	
Do	914	35	7	56	2	
Do	970	39	6	41	14	
Do	989	36	8	43	13	
October	1053	37	7	54	2	
Do	1055	35	10	51	1	
Do	1059	36	7	52	5	Same case
Do	1083	44	0	53	3	Same case
Do	1003	44	9	48	0	Same case
Do	1072	44	6	19	1	Same case
Do	1087	42	7	51	0	Same case
Do	1101	44	8	39	9	Same case
Do	1118	42	6	48	4	Same case
Do	1176	35	2	41	22	Same case
Do	1193	39	9	51	1	Same case
November	1309	36	5	58	1	After Mag Sulph
Do	1320	42	5	47	6	After Mag Sulph
Do	1312	31	6	56	4	After Mag Sulph
December	1319	11	5	60	4	After Mag Sulph
Do	1334	53	4	43	0	After Mag Sulph
Do	1424	47	9	36	6	After Mag Sulph
Do	1430	43	9	44	6	After Mag Sulph
Do	1498	38	9	43	10	After Mag Sulph
Average of 42 cases	1015	41	7	47	5	After Mag Sulph
		45	35	16	2	After Mag Sulph

(Tertian malaria superadded to No 989)

* Same case as 224 above

AUTOTOXICATION

By Action of Putrefactive Organisms in Lower Bowel

MONTHS	Serial No	Leucocytes	Large Mono nuclears	Neutrophiles	Eosinophiles	
June	224	2	9	78	11	Leucocytosis
July	360	6	7	86	1	"
Do	479	5	3	81	11	"
Do	365	12	4	82	2	"
Do	494	12	5	80	3	"
Do	689	8	4	83	5	"
August	790	21	10	69	0	"
Do	699	14	12	74	0	"
Do	789	18	12	70	0	"
Do	802	13	7	80	0	"
Do	537	18	3	79	0	"
Do	691	7	6	87	0	"
Do	863	11	8	78	3	"
Do	853	8	10	82	0	"
September	*894	7	9	66	18	"
Do		9	10	78	3	"
Do	1047	7	8	80	5	"
October	1075	9	6	81	4	"
Do	1082	18	3	78	1	"
Do	1143	12	7	81	0	"
Do	1152	15	2	77	6	"
Do	1163	11	3	86	4	"
Do	1102	4	6	84	6	"
Do	1159	17	6	72	5	"
November	1264	12	7	80	1	"
Do	1288	6	5	84	5	"
Do	1317	7	6	82	5	"
Do	1198	8	2	83	7	"
December	1343	16	8	76	0	"
Do	1360	15	3	82	0	"
Do	1386	16	6	77	1	"
Do	1427	10	5	84	1	"
Do	1441	12	4	82	2	"
Average of 32 cases		11	6	80	3	

SEPTIC INFECTIONS AND SEPTICÆMIAS

Pneumonia

Serial No	Lymphocytes	Large Mononucleate	Neutrophiles	Eosinophiles	Leucocytosis
317	2	4	92	2	+
534	5	2	93	0	+
1107	4	3	93	0	+
1150	5	2	92	1	+

1229

11 4 85 0 + Just after crisis.

Erysipelas (fatal)

268

2 8 90 0 +

Puerperal Fever (fatal)

703

1294

3 3 90 4 +

7 1 88 4 +

Acute Abscess Formation

407

481

500

689

787

853

966

1207

1223

1306

8 4 94 0 +

5 1 94 0 +

7 7 86 0 +

8 4 83 5 +

8 2 89 1 +

11 8 81 0 +

14 4 82 0 +

3 6 91 0 +

7 12 80 1 +

5 7 87 1 +

Liver

"

"

Advanced Phthisis

328

1084

1-19

1913

1415

1054

10 5 85 0 +

12 9 78 1 +

9 9 82 0 +

6 85 2 +

8 82 1 +

7 13 79 1 +

Suppurating scrofulous glands (neck)

TYPHOID FEVER

Blood Counts of Cases

Serial No		Lymphocytes	Mono nuclei	Neutrophiles	Eosinophiles
524 Child, $\text{at } 3$ years	15th day			Widal + to 1 160	
	36th "	37	6	57	0 100°
	40th "	40	33	15	3 101 2°
	49th "	40	3	55	2 103°
					Result—Removed from dist
818 Bipat, $\text{at } 27$	4th "	28	16	54	3 102°
	7th "	33	15	33	0 103°
	10th "			Widal + to 1 160	
	25th "	18	18	64	0 Normal
	33rd "	26	11	63	3 Normal,
737 Mukh Lal Singh, H M, $\text{at } 35$	1st "	55	10	35	0 102°
	7th "	29	16	56	0
	16th "	30	12	57	1
	19th "	.		Widal + to 1 160	
963 Budhua	10th "	50	4	30	7 102°
1042 Child, $\text{at } 7$ years	12th "	47	7	46	0 101 4° Course 33 days
1088 S Lal's daughter, $\text{at } 7$ years	4th "	70	8	22	0
1202 Rev G G	3rd "	6	19	75	0 Widal negative 100 4
	11th "	25	8	66	1 11 600
	23rd "	17	9	74	0 Widal negative 104
	76th "	47	3	49	1 Normal
1281 Mrs G	7th "	23	13	64	0 Blood culture positive
	22nd "	45	9	46	0
1322 Miss V	5th "	24	14	61	1 Leucocytes 5 750 102
	24th "	25	8	56	11 Normal
	29th "	37	7	52	4 Normal
	10th "			Widal + to 1 160	
1310 Child, $\text{at } 11$	8th ,	46	11	42	1 Widal incomplete reaction
	12th "	29	8	62	1 Widal + to 1 160
1372 Child, $\text{at } 5\frac{1}{2}$	6th "	54	5	39	2 100 2
					Paratyphoid B
357 Child, 6 months	6th day	56	14	29	1
	6th "			Widal Paratyphoid B Schottmuller + 1 50	
	"	"		A and enteric negative	
					Paratyphoid A
294 Child, 4 years	7th day	59	19	12	10
	15th "	61	12	20	7
1104	16th "	72	7	21	0 Normal
1153 Gulzar, H M	2nd "	54	12	34	0 102
	7th "	66	9	25	0 102
	19th "			Widal + $\frac{1}{10}$ Negative to Enteric and Paratyphoid B	
922 Abdul Rahim	3rd "	19	17	64	0
	27	13	00		0
	11th "			Widal + $\frac{1}{10}$ Paratyphoid A	
	12th "			" " " " B and enteric negative	
					Seven Day Fever
354 N M, $\text{at } 8$	2nd day	28	6	64	2 99
824 H M, $\text{at } 23$	14th "	60	4	32	4 Normal convalescent
826 Raja Singh	2nd "	57	15	25	3 99 6
1038	7th "	37	6	53	4 Normal This case had 105 with rigor on 1st and 6th days with typical saddleback curve Record not kept

The Differential Blood Count in Malaria

TERTIAN

SUBTERTIAN

QUARTAN

	Lymphocytes	Large Mononuclears	Neutrophiles	Eosinophiles		Lymphocytes	Large Mono nuclears	Neutrophiles	Eosinophiles		Lymphocytes	Large Mono nuclears	Neutrophiles	Eosinophiles
θ° N°	56	13	30	1	θ° N°	19	12	65	4	θ° N°	13	36	48	3
"	18	36	42	4	"	9	19	66	6	θ° 99 2°	24	16	53	7
"	31	13	56	0	"	28	21	48	3		26	8	66	0
"	42	8	37	13	"	32	11	53	4					
"	25	11	59	5	"	21	13	62	4					
"	26	11	57	6	"	20	17	55	8					
"	19	18	59	4	"	31	16	53	8					
θ° 100°-102°	19	27	54	0	θ° 100°-102°	10	13	77	0					
"	16	22	61	1	"	18	13	59	10					
"	33	20	46	1	"	14	8	72	6					
"	38	17	41	4	"	32	22	43	3					
"	52	18	30	0	"	17	15	67	1					
"	58	20	22	0	"	24	15	50	11					
"	20	19	57	4	"	29	10	59	3					
θ° 102°+	13	40	45	2	θ° 02°×	56	21	24	0					
"	11	15	71	3	,	28	21	50	1					
"	59	10	30	1	"	13	17	69	1					
,	63	6	29	2	"	25	15	60	0					
"	33	10	52	5	"	30	12	48	1					
"	30	31	39	0	"	21	34	42	3					
&c	&c	&c	&c			&c	&c	&c						
					θ° 103	51	19	30	0	Same case before and after quinine				
					θ° N°	33	15	51	1	See Chart No II				

THE INCIDENCE OF DIPHTHERIA IN INDIA

By C J FOX

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THE general belief that diphtheria is comparatively rare in India, and that cases which do occur are of a very mild type would appear to need some modification. That the disease is at times so mild as not even remotely to suggest diphtheria may be quite true, but that it is as rare as is generally believed is open to question. In the absence of statistics based on bacteriological diagnosis it is of course impossible to say to what extent the disease is prevalent in India or how many so-called "sorethroats" are due to the diphtheria bacillus. Clinically we know the disease is not easy to diagnose particularly in a typical cases. G S Graham Smith says "The clinical manifestations of diphtheria are so divergent that the widest experience cannot hope to diagnose correctly on clinical grounds alone any but the more typical cases. Even in such cases mistakes are not infrequently made." If this is true of European countries how much more applicable to India where the disease as a rule appears to run such a mild course?

Minor epidemics of "sorethroat" or "Follicular tonsillitis" with a fatal case or two occurring towards the end, have come within the experience of many practitioners. In some instances the throat swabs taken from one or more of the severe cases in these epidemics have proved the disease to be true

diphtheria. In the absence of bacteriological tests or severe symptoms such cases would certainly be treated as ordinary "sorethroat" and none of the precautions usually observed in diphtheria would be taken unless, after the subsidence of acute symptoms one or other of the sequelæ of diphtheria manifests itself. In those epidemics which are proved to be diphtheritic we probably have the bacillus only slightly virulent at the beginning, and giving rise to mild symptoms but gradually attaining a more virulent form by passage through human beings. This would help to explain the severe cases towards the end of such epidemics, and in which it is only the gravity of the symptoms that prompts the need or desire for a bacteriological diagnosis and leads the medical attendant to adopt the procedures for dealing with infectious disease. What is needed is an earlier recognition of the disease in order to avoid the occurrence of the severe and fatal cases towards the end of the epidemic. For the present, however, the clinician in India is satisfied with his criteria of diphtheria, viz., severity of symptoms, fatality and sequelæ, and is therefore led to conclude that diphtheria is very rare in this country. But judging from the number of positive findings in the examination of throat swabs sent to this Laboratory during the past five years I consider it likely that diphtheria is much more common in India than is supposed. This contention receives further support from the fact that the examinations are chiefly from material of severe cases and not from the cases which led up to them.

The notes given below of six cases which I have selected from among others may be of interest to practitioners as illustrating some of the various types of cases which may be met with in India. Five were cases of membranous rhinitis and one a very mild throat affection so mild that the temperature does not appear to have risen above the normal.

In the beginning of October one (case No. 1) of four children in a family developed an abrasion on the knee which sloughed. The following day a sore appeared on his lip and a discharge was noticed from his left nostril. Within the next two and a half weeks two other children (cases Nos. 2 and 3) of the same family had developed a discharge from the nose (the left nostril in each case). These three children had had slight fever but did not appear very ill. At about this time a fourth child (case No. 4), the baby became similarly infected. She, however, suffered from high fever for over two weeks. At the end of this time the temperature came down but kidney symptoms supervened and the child died on the 12th November. In the meantime another child (case No. 5) who had been in contact with these children developed an ulcer on his finger, sputum from which, together with a swab made from the nose of case No. 2, were found to contain diphtheria bacilli virulent for laboratory animals. In no case was the throat affected. Moreover only one nostril was affected and not the other. The original source of infection could not be traced.

Case No. 6 was that of a child (M.B.) admitted on 25th October for "soothroat." Temperature normal. "Follicular spots" on tonsils. Temperature that evening was normal. Spots confined to tonsils, feels and looks quite well—running about. Next morning (26th) child appeared ill. No sign of a membrane—breathing rather loud but no obstruction. Pulse over 100. Temperature normal.

Same day 1-30 p.m.—Child sat up in bed, moaned and dropped back dead.

It will be noticed that in the cases (1 to 5) of rhinitis there was no soothroat and only little fever except in the case of the baby (No. 1). In all one nostril only was affected, and there was nothing in the symptoms clinically to distinguish the disease from ordinary catarrh. In case No. 6 there was no fever and the child appeared quite well up to within a few hours of death. Yet judging from the specimens sent, the disease in all these cases was due to strains of diphtheria bacilli virulent to laboratory animals, that is to say, true diphtheria. Cases such as these may or may not be rare, but when they occur are they in the absence of fatalities such as cases Nos. 4 & 6, correctly diagnosed on clinical symptoms alone? One can hardly expect it as their very mildness and the rather unusual site of the lesion in some of the cases would lead to the cause being overlooked. Without a bacteriological examination case No. 6

would probably have been put down to acute tonsillitis. So that it is possible we have cases of true diphtheria occurring in practice which are not recognised as such unless a very severe or fatal case demanded a bacteriological diagnosis. The correct diagnosis in the absence of bacteriological examination may be forced on one by the subsequent histories of cases, namely, by the appearance of some of the sequelæ of diphtheria such as myocarditis, renal disease or palatal palsy. Blochmann writing in the *Berliner Klin Woch* (1910, Vol. XLVII, 2008) points out that nasal diphtheria in infants is often mistaken for "snuffles" or coryza, and notwithstanding the fact that the condition is fairly frequently met with, and that the appearance of the child to the experienced eye is so characteristic, a correct diagnosis is often only made on the appearance of an otitis media or complete occlusion of the nasal passages.

The mortality from diphtheria in India is certainly much less than in European countries where the disease follows a more virulent course, but can we claim an immunity from the sequelæ? Be the case ever so mild the bacilli are there and the toxins are produced, and it is well known the only way to avert the onset of complications which give rise to the usual sequelæ is to neutralise the toxins early by the timely administration of antitoxin. But some would argue that if one is to guard against the sequelæ in hypothetical cases of diphtheria one would be obliged to administer antitoxin to every case of sorethroat. I confess I do not see any other alternative in a country such as India is at present where laboratories are few and far between. At some future date (we hope not very remote) India will like most other countries have district and city bacteriological laboratories where it will be possible for the busy practitioner to obtain an opinion in something less than three days. But in the meantime it follows that the careful practitioner will see the necessity of sending throat swabs to the nearest laboratory for examination and of giving at least every case of fairly severe or suspicious looking sorethroat a preliminary subcutaneous dose of anti-diphtheritic serum pending the result of the bacteriological examination. In ordinary cases a prophylactic dose of say 2,000 units should be administered. The administration of the serum in cases of diphtheritic origin would help to avert complications or death and in cases of non-diphtheritic origin it could not possibly do any harm.

LEUCODERMA IN BURMA

By LAWRENCE G. FINK, M.B.C.M. (Edin.),
Civil Surgeon, Myaungmya, Burma.

There are three varieties of leucoderma that have come under my personal observation at the Myaungmya Central Jail and in this district.

(1) *Ordinary Leucoderma*, consisting of dead-white patches, varying in size, on various parts of the body. These patches are usually irregular in outline, slowly enlarge and coalesce and are never anaesthetic. According to Castellani and Chalmers⁽¹⁾ the initial patches are generally surrounded by a zone of hyperpigmentation and occasionally within the white areas small dot-like zones of pigmentation are left. The affected persons observed by me were all adults. One of these, a Burmese woman, about 60 years of age, was white in her whole body, except for two small brown patches on the face. I have also been told of two Karen in this district, brother and sister, who are both affected in the entire body. They are married to Karen who are free from the disease and their children are not affected. The disease is known amongst Burmans as *Kayu-thin*, this word being applied to the white shells used by Burmans at sacred services. In the Burmese Dictionary the disease is described as a variety of leprosy. The idea of heredity as a factor in the aetiology of the disease is commonly entertained by Burmans, and the disease is said to be brought out or "developed" by marriage. Mr. Jonathan Hutchinson⁽²⁾ has suggested that leucoderma is simply a revelation, under disturbance of general health of a pattern which pre-existed in the skin. This paleogenetic theory has been supported by Dr. Graham Renshaw,⁽³⁾ who favours an atavistic explanation of some diseases. One of the considerations on which he bases his opinion is thus stated—"Toxins in stimulating or inhibiting pigmentation are merely comparable to the action of a developer in producing a photographic negative already present, though latent." The paleogenetic theory is opposed by Dr. J. E. R. McDonagh,⁽⁴⁾ who thinks that the disease is due to some unknown toxæmia, the inhibitory action of certain toxins on the fermentation of the rate cells producing leucoderma and the stimulating action causing hyperpigmentation (chlorisma).

So far as I am able to ascertain this variety of leucoderma is not very common in Burma. It is not regarded as loathsome, as in India and Ceylon. The victims are not treated as outcasts. It is not regarded as a precursor of nodular leprosy. The word *Kayu-sin* is also applied to leucoderma when the white patches are streaked, but when these are uniformly dead-white the disease is spoken of as *Kayu-thin*. *Kayu* in Burmese means a univalvular shell and *sin* means drawn out in a line or streaked. Burmans usually are accurate observers and in the matter of naming skin diseases quite original. *Tinea imbricata* is known as *Kayu-pat*, which suggests the likeness of the disease to the curves on a univalvular shell.

(2) *Melung or Beta*⁽¹⁾—This disease was described by Ziemann⁽⁵⁾ as affecting the negroes on the west coast of Africa. This

variety of leucoderma affects almost entirely the flexor aspects of the hands and feet. Last year there were two Burmans in the jail exhibiting this disease, which, so far as I know, has not previously been reported in medical literature as occurring in Burma or India. I am informed that the disease is not uncommonly met with in the districts in the Irrawaddy Delta Division. In one of the cases in the jail there was a distinct loss of pigmentation, also in the lower lip at the margin of skin and mucous membrane. In a third case seen in the district a man had, in addition to the usual leucoderma of hands and feet, white patches on both nipples and areolæ. There is at present a prisoner in the jail who has only a part of the right palm affected. He attributes the whitening to having on one occasion handled with that hand a mixture of crocodile's blood and siffion! This variety of leucoderma is also known by the Burmans as *Kayu-thin*. None of the cases gave any previous venereal history.

(3) "*Syphilitic*" *Leucoderma*. This variety has been described as a "dapping" of the skin by Mr. Jonathan Hutchinson. His description cannot be improved on, and readers are referred to his article on pages 85-7 of the *British Medical Journal*, 9th January 1909. The two cases that came under my observation were adult males, one had a previous history of syphilis, but the other denied having any venereal disease except gonorrhœa. The dapping was confined to the anterior aspect of both skins and the extensor surfaces of the forearms and hands. There was some symmetry in the distribution of the disease. Mr. Jonathan Hutchinson refers to two cases in which there was a dark nucleus in the centre of the white patch. This was not present in the cases under my observation. I have, however, just seen a leucoderma on the back of the hand in a native of India and in the white patch there were several small islands of normal brown skin, and each of these had an almost black nucleus.

The "white" elephant is a sacred animal in Burma and this according to Renshaw, is an instance of leucoderma. About 10½ years ago I had the opportunity of seeing the skin of the white tiger, the first of its kind, I understand, ever shot in the world. This was seen by me in Calcutta.

It may be of interest to medical practitioners and others in Burma to know that the eruptions in the maculo-anaesthetic variety of leprosy are known to the Burmans and are distinctively named. In Castellani and Chalmers' *Manual of Tropical Medicine*, page 849, there is an excellent illustration of the disease in a dark skinned person. These authors say the macular eruption may appear as flat red spots (Burmese *Thamin-nee*) of various shapes and sizes, neither hyperaesthetic nor anaesthetic at first. Other maculae may appear which instead of being red, are simply pigmented (Burmese

Thamin-net), while still others may be seen in which the pigmentation is less than usual (Burmese Thamin *phyu*) The skin in the affected area becomes anaesthetic. After a time the areas cease to spread, the raised margin disappears, and the disease becomes quiescent. The Burmans do not regard this disease as true leprosy, but some think that it is a precursor. They are strongly imbued with the idea that the disease is aggravated by certain flesh food, especially by the flesh of the deer known as the Phamin. I have personally seen the red *nee* and the white (*phyu*) varieties of the macular eruptions. In some cases later on some thickening of the ulnar nerves has been made out by me. These eruptions are sometimes incorrectly diagnosed as *Tinea circumata*. The whitish eruption, never dead-white, cannot be mistaken for leucoderma, and the anaesthesia in the former is usually well-enough marked.

Since writing the above I have seen two more cases of "dapping," in one case on the back of the fingers and in the other on the back of the hands and front and sides of the ankles. Both are adult males with no history of syphilis. Thus three out of the four cases seen by me had no syphilitic history. Mr Jonathan Hutchinson conjectures that the affection is far more common in non-syphilitic subjects than has yet been suspected. He says—"Fauquier denies, and I cannot but think with good reason, that it can be regarded as in any way secondary to preceding syphilitic eruptions." The cases alluded to by Mr Jonathan Hutchinson showed that the malady had a preference for the female sex and for the neck and bust (parts exposed to light). He calls it "leucoderma colli" (B M J, 23-4-10, p. 980). I have not yet seen a single case in a woman, and in the four males referred to by me the dapping was confined to the extensor aspects of the hands, fingers and lower part of forearms, the extensor surface of legs and the front and sides of ankles. Staff Surgeon Kenneth H. Jones has described on p. 747, B M J, 26-3-10, a case of syphilitic leucoderma in a male with extensive dapping not confined to the region of the neck. I am unable to offer any explanation as to the distribution of the dapping in the four cases observed by me.

Jefferys and Maxwell in *Diseases of China*, a book only recently published, describe the patches of slightly raised erythema in macular leprosy. They say the hair drops out and perspiration does not occur in the infected areas. The patches are anaesthetic, in some cases the anaesthesia is not very well marked, in others it is profound, but in all on careful examination a diminution of sensation to pain and an inability to recognize hot and cold are found. These points, which have been verified by me, will serve to distinguish the disease from *Tinea circumata* without the help of the microscope. The authors unhesitatingly affirm that the

macular variety is really a form of true leprosy (nodular) for the following reasons—

(1) Because a loss of temperature sensation is very rare under any other condition than leprosy.

(2) Because this condition may be seen along with the more pronounced stigmata of leprosy in mixed cases. (This bears out the Burman idea of the macular variety being a precursor of true leprosy.)

(3) Because occasionally lepra bacilli are to be found in the nasal secretion of these patients. (These patients being infective should be segregated and this is the plan adopted by me in the jail.)

REFERENCES

- (1) Manual of Tropical Medicine by Castellani and Chalmers
- (2) British Medical Journal, 23-4-10, p. 980
- (3) B M J, 21-1-11, p. 1367
- (4) B M J, 13-8-10, p. 407
- (5) Supplement to Third Report, Wellcome Research Laboratories, Khartoum, by A. Balfour, p. 171
- (6) B M J, 9-1-09, pp. 857

A Mirror of Hospital Practice

DILATATION OF THE ANUS AS A MEANS OF RESUSCITATION IN CHLOROFORM ANAESTHESIA WITH SUGGESTION FOR ITS USE IN CASES OF DROWNING

BY W. D. KEYWORTH, M.B. (Cantab.), M.R.C.P. (Lond.),
LIEUT., I.M.S.

IN cases of failure of respiration during chloroform anaesthesia digital dilatation of the anus is in many, at any rate, of the London hospitals a recognised mode of treatment, whilst in other hospitals this method of treatment is not apparently much used. My own experience goes to show that it is a measure of the greatest efficacy, and that it should be tried in every case where a reasonable trial, to induce respiration by the ordinary means, has failed. During the year 1910 it has fallen to my lot to treat three cases of this nature. In each case the result has been completely satisfactory, and my own opinion is that the first two cases would otherwise, almost certainly, have terminated fatally, whilst the third gave rise to some anxiety. Considering the small number of operations that, as a Regimental Medical Officer, I was called upon to perform my experience, in having such a comparatively large number of these cases, I can only regard as unfortunate. The chloroform was in each case administered by a Hospital Assistant, by the open method, and I was satisfied that it was given with reasonable care and skill. No sign of organic disease was found in any of the cases nor was there anything to lead one to suspect the presence of the *status lymphaticus*, no enlargement of thyroid, etc. The fact is, that

in spite of "reasonable care," these cases do occur. As the result of enquiries I have come to the conclusion that dilatation of the anus is very little used in this country as a means of treating them.

Hence this paper, which does not therefore except possibly as regards the final suggestion, pretend to contain anything original.

Case (1)—Sowar, 16th Cavalry, at Lucknow, February 1910. Periosteal abscess of Tibia. I administered the chloroform myself till the patient had reached the "2nd stage," then I handed over to the Hospital Assistant while I "scrubbed up" at a basin only a few feet from the patient, so that I could supervise the anaesthetic. I then gave the leg a final wash up, having just noticed that the pupils were small and the patient breathing well. I was about to make the incision when, almost suddenly, the respiration ceased. The pupils were found to be widely dilated and fixed. The usual aids were at once tried, viz., head over the end of the table, tongue drawn out, finger passed into throat to ensure the absence of obstruction and later for titillation of the vocal cords, rhythmical compression of the chest, but there was no spontaneous effort at respiration when the artificial movements stopped. The legs were separated, and the anus, which felt atonic, was dilated at first with the two index fingers and then with the two thumbs. The effect was instantaneous. The patient started breathing with a loud crowing inspiration and no more trouble was experienced. The operation was completed.

Case (2)—Sepoy, 7th Rajputs at Dinapore, April 1910, while good naturedly helping to right a *bail gharry* that had upset on the road patient was kicked by the buffalo on the upper arm. The triceps was cleanly severed nearly down to bone. There was some loss of blood but not sufficient to affect his condition, as he was a big powerful man. He was taken to hospital and dressed about an hour after the receipt of the injury. I sewed up the wound, but once again, just as I was about to insert the first stitch in the muscle respiration failed. The rest of the tale is a replica of case (1) so I will not repeat. Suffice it to say that the patient recovered and the wound healed by first intention. The sphincter was atonic in this case.

Case (3)—Sepoy, 88th Carnatic at Calcutta, operation for right inguinal hernia, December 1910. In this case the patient was a shallow breather throughout the induction, but otherwise he was satisfactorily anaesthetised. The skin incision was made and I was hoping that, as generally happens with shallow breathers, the respiration would improve when the operation was commenced. Instead, however, the respiration became more and more shallow and finally ceased. Artificial respiration was commenced and the patient started breathing again in a fitful sort of way for a minute or so and then stopped again. After one or two further attempts of the same sort, as satisfactory breathing was not excited, the anus was dilated as in the previous cases. The measure acted "like a charm." No further trouble was experienced and the operation was completed. Unfortunately suppuration ensued with skin stitches, but otherwise the operation proved satisfactory. In this case the sphincter proved on dilatation not to be relaxed.

There are certain particulars which ought to be included in the above accounts. They are (a) the amount of chloroform given, (b) the length of time during which natural respiration was almost or entirely absent, (c) was the heart beating or not. As regards (a) I have not the figures by me, but it is sufficient to say that the amount given was quite

moderate, I am aware that different people's standard differ in this respect, but I do not think anyone would say that chloroform was given to excess.

(b) Time was not taken, and any figure given as the result of guess-work are obviously subject to grave error. In the state of anxiety, which goes on increasing the longer the patient refuses to breathe, every minute seems an hour, and I can therefore only give my own opinion, namely, that the time was long enough to give rise to genuine alarm. In case (3) it is quite possible that normal breathing might have re-started if the ordinary modes of treatment had been persisted in. Put profiting by previous experience I did not wait for respiration to cease entirely. Any mode of treatment which cuts short that period of anxiety (*i.e.*, when the patient is not breathing) is a boon for that reason alone.

(c) In cases (1), (2) I could not distinctly hear the heart beat, but I am not prepared to say that it had entirely stopped. In case (3) the heart was beating faintly, the pulse at the wrist could be felt in none of the cases. Ether was injected hypodermically in cases (1) and (2) and strichnine in case (3).

I am not aware of any satisfactory explanation of the stimulating effect of forcible dilatation of the anus. The effect on the breathing of premature dilatation of the anus in rectal cases is a familiar instance of the same phenomenon.

Dilatation of the anus before the patient is properly anaesthetised, is known to be a measure fraught with danger from the "shock" involved. Similarly when respiration has failed, that same instance stimulus which produces "shock," may be sufficient to re-start respiration.

Possibly if used in an unsuitable case (*i.e.*, when the respiration has temporarily ceased in early anaesthesia), dilatation of the anus might be a dangerous measure. But I do not think the mistake is likely to be made.

It might be argued that failure of respiration was due to careless anaesthetising on the part of the Hospital Assistants concerned. In my opinion it was not so in the cases related. But if, for any reason, this untoward accident is especially likely to happen under the hands of Hospital Assistants, it is all the more reason that this simple method of treatment should be brought to their notice as a routine measure, as it does not hitherto appear to have been. And for their benefit, if for no one else's, let me give a brief résumé of the correct method of treating these cases of failure of respiration as it appears to me.

1. Ensure the presence of a good airway and correct any defect in the same. Under this heading it might be necessary to remove from the throat any foreign body that had previously escaped observation, or to perform tracheotomy, a finger should generally be passed into the throat.

2 The head should be lower than the chest and preferably beyond the end of the table, all pillows should be at once removed, the head should be placed on one side and the tongue drawn out. In this position rhythmic compression of the chest should be tried by any of the various methods, these measures usually suffice, hypodermic injections are usually given.

3 If after a reasonable trial these measures do not succeed, then dilatation of the anus should be tried before resorting to any of the more drastic measures such as transdiaphragmatic massage of heart after laparotomy, etc.

Suggestion for the treatment of apparent death from drowning and suffocation from other causes. It appears to me only logical that this method of treatment should receive a trial in cases of drowning, etc. The time which has elapsed since the patient presumably last breathed is usually longer in these than in anaesthesia cases, but otherwise the cases are closely analogous. Personally I intend to use the method in the next case of the sort I am called upon to treat, after of course attending to the airway, and I suggest that dilatation of the anus is a measure worth trying in all cases of this sort.

A PECULIAR PIGMENTARY CONDITION

BY A CAMPBELL MUNRO,

M.D., I.M.S.

History.—In October 1910, the patient, Sepoy T K, 27th Punjabis, showed me some pigmented spots on his face, hands and left leg. They first appeared in March, 1908, when the patient was living in Jhindoli. He believed that quinine, which he was taking prophylactically at that time, caused their appearance. No fresh spots have appeared since then, but some of the original areas have increased in size. In November, 1908, the condition was treated for two months in the regimental hospital, but neither irritants applied locally nor mercury, iodides and arsenic taken internally had any effect on it.

Patient never saw any other person similarly affected.

Condition when seen.—The pigmentation was dull and slate-coloured. The pigmented spots were irregular in outline, fading away at their edges. They varied from $2\frac{1}{2}$ " to $2\frac{1}{2}$ " in their longest measurements. Five of the areas were situated on the face—one on the forehead, three on the cheeks just anterior to the ears, and one below the lower lip extending up at each side on to the cutaneous surface of the red lip. There were three spots on each hand, and one on the front of the left leg four inches above the ankle. Two of the areas on the left hand were large, measuring $2\frac{1}{2}$ " by $1\frac{1}{2}$ " and $2"$ by $\frac{3}{4}"$ respectively. In them there was a central, unpigmented space

showing fine cicatrification, enclosed by a narrow pigmented strip. The patient said that, when these spots were smaller, they were pigmented throughout like the others. There is no loss of sensation in the areas.

A curious feature was the local action to quinine taken internally. The patient had none of the ordinary symptoms of cinchonism, but, after he took a dose of 10 or 15 grains, the pigmented areas became congested, itchy and slightly raised above the skin level. The irritation started on the day following that on which the Quinine was administered and lasted for about 48 hours, in the case of the larger areas, it was confined to the pigmented margin. The areas do not shrink after these periods of irritation, and the patient is convinced that they actually enlarge on each occasion.

A small piece of skin from one of these areas was excised under aseptic conditions, and Major Leonard Rogers, I.M.S., inoculated with it both ordinary culture media and special acid media for fungi. No growth occurred in any case. Sections of the skin showed no bacteria, pigment granules were seen in the deeper layers of the cutis vera.

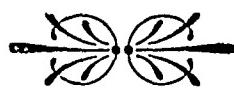
Strong local irritants together with full doses of arsenic internally were tried. The arsenic did not, like quinine, cause congestion of the areas.

After a month's treatment, the pigmentation was not quite so dark as formerly, thereafter, the man passed out of my care.

It would be interesting to know whether this condition has been noted elsewhere. The man was shown to the Medical Section of the Asiatic Society at Calcutta, none of the medical men present had seen a similar case. It does not correspond to Xeroderma pigmentosum or any other condition described in text-books, so far as I can discover. The centrifugal extension with central cicatrification, plus the active reaction to quinine in the growing part, seems to point to a micro-organic cause, possibly ultramicroscopic.

NOTICE

With this issue we publish a valuable contribution on the aetiology of Leprosy in the form of a Special Supplement.



Indian Medical Gazette

MAY

A FORECAST OF MEDICAL MATTERS

THE following speech made at the Imperial Council by Surgeon-General Lukis is here reproduced as it foretells pretty clearly the development which may be expected in medical matters in India

It is known that the original scheme of the Secretary of State for developing an independent medical profession in India was found to be impracticable, but the Director-General never has lost sight of his interest in the independent profession in India

During the month of March meetings of representative medical men in Calcutta have been held under the Presidency of Colonel G F A Hailes, F R C P, I M S, with a view to the improvement and the consequent recognition of the various ill-equipped and uncontrolled Medical Schools which have grown up of recent years in Calcutta. It is well known to our readers that the opposition to these unrecognised schools has come entirely from the Indian practitioners trained at the Medical College, the Campbell Medical School or other similar institutions in other provinces. The graduates of these institutions who have gone through a prolonged course of study and passed stiff examinations after a curriculum approved of by the Medical Faculty of the Calcutta University have naturally felt aggrieved by the starting of Medical Schools, which (they did not hesitate to say) did not make the same severe demands on the student's time or pocket, yet turned out students which so far as an ignorant public or equally ignorant employers knew were "qualified" just as much as those who were hallmark'd by the license of a Government Institution.

It is known that this natural agitation led to the demand for some form of Registration Act whereby the public could be enabled to judge of the extent of a man's qualifications. It is satisfactory to know that there is an early prospect of such a Medical Bill being introduced into Bengal and Bombay and doubtless if they prove satisfactory an All-India Act will in due time follow *

This is what is demanded by all practitioners of Western Medicine in India. At the same time the Medical Council established by such Act will naturally demand a fixed and fairly high standard of qualification, and medical teaching of the present day is of such a character that it cannot be imparted in any satisfactory way without considerable expenditure on hospitals, laboratory equipment, etc

We are therefore in entire sympathy with the scheme for amalgamating the existing unrecognised schools in Calcutta into one or more large and well-managed institutions, which would constitute extra-mural schools which would be recognised by the Medical Council and which would have the necessary repute and standing in the eyes of the public

It will probably be found necessary also to provide for some sort of state qualification, which should be a fairly high minimum requirement before registration, while the more ambitious or able students would naturally go on for the higher qualifications

Another important matter referred to in the speech of Surgeon-General Lukis is the establishment of a Tropical Research School for post-graduate work, which we understand will certainly become soon a *fait accompli*. Such a school will not only attract students from all parts of India, but we expect it will be largely resorted to by students from Europe and the Colonies, for there is more clinical material for such students in one of the hospitals of Calcutta, Bombay or Madras than in all the so-called Tropical Schools of Medicine in Europe

We herewith append the speech of the Hon'ble Surgeon-General Lukis —

"Mr President, with your permission I wish to say a few words on the subject of the encouragement of independent medical practitioners in India. What I propose to do to day is to point out to the Council the various steps which the Government has already taken to improve the position of those gentlemen and also to indicate the lines on which they might, if they choose to do so, help themselves. I wish it to be clearly understood that I am not to be regarded in this respect either as the mouthpiece of Government or as holding a brief for the Indian Medical Service. I speak merely as one who has been a teacher of medicine in this country for twelve years and whose interest in the progress of medical science in India and in the improvement of the status of Indian practitioners is as keen as that of Mr Gokhale on the equally important subject of primary education. Now if we study the position of independent practitioners in India, we observe that

* The Act will not apply to the Hakim Vaid or Kabir who does not base his practice on the principles of European Medicine and Surgery, etc

they labour under three disabilities which are not shared by their professional brethren in western countries. In the first place, private medical students after obtaining their degrees or diplomas, are practically debarred from filling the posts of house surgeons and physicians in the large Government hospitals, these appointments being in most cases reserved for civil assistant surgeons, and they are thus prevented from gaining much clinical experience before going out into the world to practice on their own account. This is a very severe handicap, and to remedy it the Government of India have proposed, and the Government of Bengal have agreed that in future the appointments of house surgeon and house physician in the large Presidency Government hospitals shall be thrown open to the best students of each year, whether or not they propose to enter the Government service. This is a very great boon, and it will, I hope, be taken full advantage of by the coming generation of Indian medical men. The second disability is that there are at present no facilities for post graduate study such as exist in connexion with all the large medical schools in England and continental Europe. The result of this is that a young man going to practice in a remote mofussil station where he is probably overworked and underpaid and when he has neither the leisure nor the facilities for study, fails to keep abreast of the advance of medical science and very quickly lags behind the race. The Government of India recognising what a drawback this is, and how it militates against a successful career are now formulating a scheme for starting in Calcutta a school of tropical medicine affiliated to the Calcutta Medical College, and for the introduction of a diploma in tropical medicine in connexion with the Calcutta University. This School of Tropical Medicine will afford facilities both for post graduate study and for research work, and it will be open to all properly qualified medical practitioners. The young doctor from the mofussil will thus have a chance of coming back to hospital and furnishing up his knowledge, while those who wish to carry out original work will have every opportunity of so doing in the research laboratories attached to the school. The third disability and this is one that we hear most about, is that medical practitioners are unable to obtain professorial and hospital appointments in the large Government Medical Colleges. This is, I admit, a very grave disability and one which has the serious consideration of the Government, but in this connexion I should like to invite the attention of the hon members to some very sensible advice which was given to Bombay medical men by Dr Temulji Nauman when he was entertained at dinner by over one hundred Indian medical men on the 13th August 1909. In the course of his speech Dr Nauman said, "If Indians wish to bring into existence a profession of native doctors they should not hanker after one or two minor professorships in the Grant Medical College, but should all unite and set to work to found a medical college of their own. It is only when we have a large number of teachers with hospital experience that we shall be in position of an independent medical profession and by perseverance, industry, and self sacrifice we are bound to produce men who will adorn our profession and

leave their names to posterity as those of Jenner, or Harvey or Lister or Simpson. Founding hospitals alone will not elevate our status. We must have our own college with laboratories where some of our best men may carry on original research work. It may take years for its completion, but let us make a beginning." This was a most wise and statesmanlike speech, and I beg of my Indian colleagues to give it the careful consideration it deserves. Let them not be content merely with obtaining a proportion of the professorships in the Government Medical Colleges let them all unite and found well equipped medical colleges of their own. This is a subject that is worthy of the consideration of the wealthy and charitable public, and I can assure them that by encouraging the establishment of unofficial medical colleges and schools, either affiliated to the University or run on the same lines as the Government medical schools, but conducted by independent medical practitioners, they will be conferring a boon not only on the medical profession but also upon the country at large. It is well known that the Government colleges and schools cannot provide for more than a fraction of those who apply for admission. In Calcutta alone about two hundred candidates are rejected every year. There is, therefore, ample room for well equipped and adequately staffed unofficial medical colleges and schools, professorships at which would afford the experience which can only be derived from work done in institutions of this class. In an admirable speech which we all listened to with such interest yesterday, Mr Gokhale when pleading the cause of primary education said, "this is a case in which it is necessary that there should be cordial co-operation of the Government with the public." May I be allowed to reverse the term, and to say that this is a case in which it is necessary that there should be the cordial co-operation of the public with the Government. Personally I look forward to the day when in every important town of the Indian Empire we shall have a well equipped non official medical college staffed entirely by Indians working in friendly rivalry with the Government Medical Colleges, each institution striving its hardest to show the best results at the University examinations. As Dr Nauman said, this may take years to accomplish, but I earnestly hope that before my time comes to leave India I may see that an accomplished fact at any rate in Calcutta and Bombay. If anything I have said to day should induce the leaders of the people to take an active interest in this scheme I shall feel that I have been justified for having trespassed so long upon the patience of the Council."

Current Topics

THE PRINCE OF WALES' HOSPITAL, CALCUTTA

ON the 22nd March 1911, Her Excellency Lady Hardinge opened the new surgical block in the Medical College, the foundation-stone of which was laid in February 1906, with masonic rites in the presence of His Excellency Lord Minto.

The need of a new surgical block in connection with the Medical College Hospital, Calcutta, has long been felt, and Surgeon-General Lukis and Sir Havelock Charles were instrumental in persuading the local government to provide money for the land, which was acquired at a cost of close on 2½ lakhs.

Since then the work has been going on, and the building has been finished some months ago by the Public Works Department, but its opening has been delayed by the non-arrival of the furniture and equipment.

The ceremony of opening the new hospital took place in a *shamana* in the grounds in front of the new building, and a description of the scheme was read to Her Excellency by Lt-Colonel J T Calvert, M.B., the Officiating Principal of the Medical College.

The hospital contains 88 beds, so that each of the Surgeons, Major Bud, F.R.C.S., and Major C Stevens, F.R.C.S., will have 44 beds, and incidentally the removal of the surgical cases will provide more beds for the medical side in the old hospital buildings.

The hospital is a beautiful one and we have seen nothing in London to beat it. The wards are marble floored, provided with first class furniture and with fans over each bed. The sanitary and latrine arrangements are exceptionally good, and every effort has been made for the comfort and convenience of the nurses by means of electric lifts and food lifts, bells, pantries, &c. The cost has been as follows —

	Rs
1 Land	2,47,295
2 Building and fittings	6,34,019
3 Electric installation	70,115
4 Furniture	30,922
5 Equipment, beds, instruments, &c	35,234
 Total	 10,17,585

The staff may well feel that the Government have interpreted their wishes and recommendations in a most liberal manner and that they now have a building which has fulfilled the request of Sir Havelock Charles, who wrote thus in 1904. "If we are to have a surgical block, let us have one above reproach in itself and in its surroundings—one that our successors will not scorn us for the legacy we leave them—one that can be shown to professional visitors from foreign countries without the blush of shame on our faces."

TUBERCULOSIS IN INDIA

We desire to call attention to a valuable report by Dr J A Turner, the Health Officer of Bombay, entitled How Tuberculosis is spread in India? We make the following extracts but recommend our readers to procure the pamphlet for themselves —

"We are now in this position, that tuberculosis is spread by inhalation and ingestion of material infected with tubercle bacilli.

That children chiefly do rapidly become infected with tuberculous milk, and that they contract intestinal tuberculosis, which may become pulmonary and general.

That the most common cause of phthisis (pulmonary tuberculosis) in young people and adults, is by inhalation of material containing tuberculosis bacilli.

This brings me to my point, namely, the possibility of children in India contracting tuberculosis both general and pulmonary from tuberculous cattle, either by milk or infected faeces and also by milk, infected by human agencies.

1 Whether cows or buffaloes in India suffer from tuberculosis.

2 Whether milk could be infected from human or bovine agencies after it had been drawn from a healthy animal by the habits and customs of the attendants and the infected faeces.

3 Whether the human being especially children could not contract tuberculosis because of the intimate relation of the working classes with cows, bullocks and buffaloes, and the enormous use made of cowdung, some of which must be infected.

With a view of verifying this some nine months ago, I undertook the examination of samples of milk and human sputa from milk shops and milk cattle stables in Bombay, assisted by the late Dr Ghadially, Municipal Analyst and Bacteriologist, and since by Dr Joshi, acting Municipal Analyst and Bacteriologist.

Along with these examinations samples of human sputa from milk cattle stables, bathing places, washing places for cows and buffaloes, and milk shops and in the streets, were collected and examined for tubercle bacilli.

Out of 208 samples of milk examined, 30 contained an acid fast bacilli resembling tubercle bacilli, or 14.4 per cent, out of 271 roadside sputa examined 33 contained tubercle bacilli or 12 per cent."

The results of my investigation are —

(1) "That cattle in Bombay and presumably other parts of India do suffer from tuberculosis to a slight extent.

(2) That it is possible to infect milk by human agency owing to the habits and customs of the attendants and the method of distributing milk.

(3) That a possible source of infection is the faeces of infected cattle due to the intimate connection there is between the labouring class and the cattle and the enormous use made of cowdung in the houses and surroundings.

I do not mean to suggest that tuberculosis in India is caused only by infected milk or food, on the contrary, but that it is one cause which has hitherto not been investigated, nor do I maintain that the experiments detailed here anything like cover the whole ground or are in any way complete, or that there is not a probability of error as in all such experiments but with the pressure of other work in a very large and busy department complete research cannot be undertaken, they are sufficient evidence to warrant further inquiry and more stringent regulations regarding the milk and food supplies in India.

The figures I have given show that the mortality from tuberculosis is higher in India than in England, that the milk and sputa examined show that there is risk of disseminating the tubercle bacillus, while the presence of the tubercle bacillus in the faeces of infected animals is a greater danger in India than in other countries.

The argument that all milk is boiled before being used is applicable to any milk borne disease. The majority of people would prefer to know that the milk comes from healthy animals and is pure.

The same argument applies to malaria. There are those who advise taking quinine as it is hopeless to exterminate the mosquito, but will people take quinine regularly and in sufficient quantity to render themselves immune from malaria bearing mosquitoes any more than they will regularly and systematically sterilise all food?

Sanitation and education in sanitation and the application of sanitary laws and regulations, sanitary surroundings and the removal of the cause of the disease applies in tuberculosis and malaria and plague as in all other communicable diseases.

Every preventive measure should be availed of and all milk should be boiled."

RICE AND BERI BERI

We have received a pamphlet written in a fighting mood and with an amplitude of capital letters and leaded type in which Dr Leonard Biaddon, M.B. (Lond.), F.R.C.S. (Eng.), complains of an injustice done to him owing to the attribution to Drs Fraser and Stanton of the Malay Institute of the credit for having discovered the cause of beri-beri.

We are glad to say that we have always recognised the very great share due to Dr Biaddon in this discovery, as a reference to our pages in the year 1910 will show (see e.g., *IMG*, April 1910, p. 151, June, p. 232). We are of opinion that in India people have always given credit to Dr Biaddon, for he conclusively demonstrated the danger of milled rice and the harmlessness of rice prepared, as in Bengal, by the more primitive methods, but the fact that the work of Drs Fraser and Stanton showed definitely wherein the difference between the two rices consisted has naturally attracted great attention to their work and has to some extent obscured the great work done in this matter by Dr Biaddon, whose work entitled *The Cause and Prevention of Beri beri* is known to all interested in this subject. We certainly think that in all references to this work the names of Dr Leonard Biaddon, and of Eikmann too, should be associated with those of the workers in the Malay Institute, Drs Fraser and Stanton, the more so as Dr Biaddon had an up-hill fight to have his views proved, and it was in the course of testing the truth of them that Drs Fraser and Stanton made the further discovery of the value of the portions of the rice removed in the preparation of rice in the mills.

MALARIA IN FEDERATED MALAY STATES

We desire to call attention to this very interesting report on the antimalarial work done in the Federated Malay States.

It is written by Dr Malcolm Watson and has a preface by Major Ronald Ross, and is published under the auspices of the Liverpool School of Tropical Medicine.

In the course of some 38 pages, Dr Watson gives a complete history of antimalarial work in Klang and Port Swettenham.

It is not easy to get at any facts indicating the results of expenditure, but one table shows that while in 1900 there were 474 deaths in hospital, in 1901, 582, these numbers fall in 1902 "immediately after the antimalarial works had been undertaken" to 144, and up to 1905

the number has remained about 113, whereas in the district excluding the town the number of deaths here increased from 306 to 622. It is not clear why statistics five years old only have been produced.

Even more interesting are certain figures quoted from reports of the Indian Immigration Department, where a remarkable falling off in the death-rate per mille is shown in 1908 as compared with 1907.

Perhaps the most valuable portion of this report is that on the value of and on the limitations of quinine. He concludes that "quinine can never do more than give temporary relief to India, and that the factor to be dealt with is the anopheline and measures must be aimed at it in rural districts as well as in towns." He therefore considers the policy of spending money on quinine for an indigenous population where drainage is physically impossible, appears to him to be "indefensible, either on medical or financial grounds." Shall we therefore do nothing? Surely even a "temporary relief" is something gained.

We commend this volume to all interested in antimalarial work. It is full of information and much of the experience gained is applicable to parts of India, such as the Assam and Dooar tea gardens.

It is too long a report to abstract here but our readers should study it for themselves.

THE SANITARY COMMISSIONER'S ANNUAL REPORT *

The Annual Report of the Sanitary Commissioner with the Government of India is a volume, which, though necessarily late in appearance, is always of great interest and value, and the present volume, for 1909, equals, if not surpasses, many of its predecessors.

As this volume is circulated to all medical officers in India, we need not go deeply into its numerous and varied contents, and it will be sufficient if we point out a few of its most interesting points.

In the first section we must call attention to the valuable maps which show the connection with the rainfall in India and the mortality from "fever."

In section II which deals with the European army in India, we note that the death-rate as well as the sick-rate and the invaliding-rate are the lowest on record. Not only are the rates for 1909, the lowest ever recorded, but the reduction is not more remarkable for its degree than for its suddenness "it would seem" (says the Sanitary Commissioner) "as if a previously unknown or untried hygienic measure of great power had been brought into use," and he does not hesitate

* On the day this notice goes to Press, we have heard with great regret of the death of Lt. Colonel Leslie, the first Sanitary Commissioner with the Government of India under the new scheme.

to state that the new factor for good is "personal and individual hygiene," that is the endeavour to teach to the soldier how to "guard against enteric fever, malaria and venereal diseases." This is certainly very satisfactory, for if the decrease is due to this cause and not to mere luck, then we may confidently look forward to its continuance.

In dealing with the subject of the quinine prophylaxis of malaria, we note the opinion that personal superintendence of the distribution is of the first importance, and personally we believe that if the men really take the quinine it matters not in what form it is administered—though we have a personal preference for the tablets of quinine, as all must agree that quinine in solution is a very unpleasant drug.

As regards enteric it is good to see the marked reduction in its incidence and fatality, and we can only hope that the campaign against the chronic bacillus carriers will not be relaxed. It is cheaper as well as better to keep these carriers four months in an isolation dépôt than to allow them to spread the disease. The care in selection of men who cook or handle food, the examination for contacts—that is men who have been in association with the infected persons, and the use of antityphoid inoculation have all had their share in reaching the present creditable and satisfactory results.

As usual the review of the literature of enteric is well done.

Another disease, abscess of the liver, shows a very satisfactory decrease. This is coincident with a decline in the admissions to hospital from alcoholism—but we are surprised to find no mention of the preventive treatment of hepatitis by ipecacuanha, which has been so strongly supported by clinical physicians.

The native army of India also shows a very satisfactory decrease in sick and death-rates, but there is less of special interest in the account given.

In the section devoted to prisoners in India it is pointed out that the same notable fall is not to be chronicled, but 1909 was in many parts a year of overcrowding, and overcrowding connotes increase of petty crime, due often to scarcity, with the necessary result that the jails become filled with prisoners who have more or less severely suffered from privation, and it is simply impossible to expect a high standard of good health from these people, the "submerged classes," compared with the picked men of the European and Indian army.

As a matter of fact, the following year 1910 has shown that the good and prosperous years of 1909 and 1910 have resulted in a marked improvement in the health of the prisoners, and no one factor is so important in the health of prisoners as a good and prosperous year. Moreover the fact of the reduction from an average of well over 60 per mille death-rate forty years ago to an average about 20 per mille (and often under it)

shows the enormous strides which have been made in jail sanitation.*

Section VI of the report deals with the chief diseases, and we need not again quote the conclusions of the Plague Advisory Committee. In spite of all the work done, plague is still with us and in some districts as bad as ever.

The account given of antimalarial work is of interest, and it is to be hoped that cities at home will read this and the similar accounts given in *Paludism*.

A very interesting section of the report is devoted to a brief account of the work done in the various laboratories in India, and we note with pleasure the increasing demand for curative serums and vaccines. We may note en passant that the Central Research Institute prepared and makes available a "polyvalent curative dysentery serum." A prophylactic dysentery serum would be much more useful, for dysentery can be successfully cured in many ways. We await with interest the report of the work done in dysentery research, for there is no disease in India more important, and no disease more protean and pace the text-books, we still know but little of the dysenteries. If the same persistent interest were taken in dysentery as has been taken in enteric or Malta fever, we would doubtless have equally practical results. The note on Captain Patton's suggestive work on oriental sore is interesting, and we must await the publication of Major Greig's *Memor* on epidemic diphtheria before pronouncing upon its connection with, or difference from the beribers.

We may now leave this report and commend it to our readers. It is a mine of information on many aspects of public health in India.

OBSERVATIONS ON DENGUE

We extract the following from the Bulletin of the *Manila Medical Society* (Vol III, No 1) Nagib Aidati, M.D., Beniu, Syria (Med Rec, Sept 3, 1910). The author confirms Graham's work on the aetiology of Dengue. He describes the parasite as follows—

1. Fresh specimens examined carefully with the dark-field illuminator showed, in many erythrocytes, small, brilliant, light-reflecting bodies, which changed their shape, at one time appearing round, and at another fusiform, and moved freely in the blood corpuscles.

2. In specimens stained according to Giemsa-Romanowsky I was able to find in the erythrocytes small, usually round, but sometimes elongated, fine, granulated, from purple to blue coloured bodies, of the size of 1.5 to 1.3 of a normal erythrocyte, occupying the margin, but also at times the centre of the blood corpuscles. In some specimens these bodies seemed to be

[* In Bengal in 1860 the prisoner's death rate was 168 per mille. In 1910 it was only 18 per mille—a reduction of 150 per mille in half a century.—ED.]

half way outside the corpuscles, and in others to have completely left the erythrocytes, these latter, however, are sometime difficult to differentiate from the blood-platelets. For the blood examination, special care was taken to select patients who never had had malaria.

The parasites were present in the blood of each case, showing clinically the symptoms of dengue, and they seem to be very similar to if not identical with those described by Professor Graham. It has been proved that dengue is transmitted by the *Culex fatigans*, and the disease has been experimentally produced in districts where it does not normally occur and where the *Culex* is not found, by allowing mosquitoes which have fed on dengue patients to bite healthy individuals in whom all the clinical symptoms of the dengue developed. The blood of such patients examined showed the presence of the parasite described above.

Taking these facts into consideration, together with the observations on the parasite above described, and its constant presence in the blood of patients clinically diagnosed as sufferers from dengue, I have no doubt but that this parasite is the cause of the disease.

The life history of the parasite is not easy to follow. At an early stage of the disease it appears in the erythrocyte as a speck which enlarges and eats away the haemoglobin around it, and inside of 24 to 36 hours the speck reaches the size of about 1.5 a normal erythrocyte and fine granules appear in it.

About 60 hours after the beginning of the attack the parasite seems to reach its maximum size and begins to migrate out of the erythrocytes, usually by rupturing the latter. From this time on we find many parasites that are extra-corporeal and other intra-corporeal, as it were another crop beginning its cycle.

The extra-corporeal parasites look like a group of fine granules arranged more or less in circles, sometimes two or three of them lying side by side, each of them resembling a group of blood-platelets. In the leucocytes are often found small granules which seem to show that the parasites were taken up by the white corpuscles.

Microscopically there are some points of differentiation between the dengue parasite and that of malaria —

Dengue	Malaria
1 Smaller	Larger
2 Usually round	Different shapes
3 Slightly pigmented	More pigmented
4 Finer granules	Larger granules
5 Less stainable	More stainable

DESTRUCTION OF FLEAS BY EXPOSURE TO THE SUN

In a practical article (*Scientific Memoirs*, No. 40), Capt J. Cunningham, M.S., details some very interesting experiments on disinfection by sunlight, or rather of destruction of

possibly plague infected fleas by exposure of clothing to the sun. As there is no doubt that plague is frequently carried from one locality to another by means of clothing and baggage which contain infected fleas, it is therefore very necessary to devise some simple means of destroying these fleas yet appears that there is no known so called "insecticide," which is thoroughly suited for the purpose. The only one at all successful was naphthaline powder, but it was very slow in action, requiring 9 hours to kill off the fleas.

FIELD HOSPITAL NOMENCLATURE

The following is published in India Army Orders of 6th March 1911 —

"Organization—Medical—In order to assimilate, as far as possible, the nomenclature of units of the Indian war organization with those of the Home organization, the terms 'British Field Hospital' and 'Indian Field Hospital' have been abolished."

The existing and future corresponding designations of medical units in the field are given below —

Present designation	Future designation
"British fast moving field hospital"	"British Cavalry field ambulance"
"Indian fast moving field hospital"	"Indian Cavalry field ambulance"
"British slow moving field hospital"	"British field ambulance"
"Indian slow-moving field hospital"	"Indian field ambulance"
"British field hospitals on a line of communications"	If at the head of the line of communications, "British clearing hospital"
"Indian field hospitals on a line of communications"	If on the line of communications for stationary work 'British stationary hospital'
"Indian clearing hospital"	If at the head of the line of communications, "Indian clearing hospital"
"Indian stationary hospital"	If on the line of communications for stationary work, "Indian stationary hospital"

VICIOUS CIRCLES IN DISEASE *

We must commend this interesting and suggestive volume to our readers.

By the expression "vicious circle" is meant a morbid process in which two or more disorders are so correlated that they act and react reciprocally on each other. "The condition is therefore a self-aggravating one and self-perpetuating one, until the circle can be broken."

* Vicious circles in disease by J. B. Murray, M.D. London T & A. Churchill, 1911 Price 6/-

Dr Huiry points out that, although vicious circles are very common, they have received but scanty attention. He divides them into seven groups, viz., organic, mechanical, infective, neurotic, chemical, of those due to imperfect repair and artificial circles.

Take for example the following—Dental caries, gastro-intestinal catarrh, malnutrition, lowered resistance—or a prostatic circle, congestion of prostate, retention of urine, pressure on prostatic veins and again congestion of prostate and so on and on, or an eye circle—lens and iris pushed forward, shallow anterior chamber, deficient filtration, increased tension, again lens and iris pushed forward.

A study of these correlations is very important, and as Dr Huiry says, throws fresh light upon the aphorism of Hippocrates—"The whole body sympathises with every part and every member with the whole throughout its structure" (On Nutrition, p. 23). The thoughtful physician or surgeon will read the book with profit and with pleasure.

THE QUALIFIED MEDICAL PRACTITIONERS' LIST

COLONEL G F A HARRIS, FRCP, I.M.S., the Inspector-General of Hospitals in Bengal has brought out another edition of the useful list of qualified Medical Practitioners in Bengal. The list is a triennial one and is divided into five parts (1) list of recognised bodies, (2) list of names of persons living in Bengal who have been qualified in Europe. This includes the Medical Officers of the Services and private practitioners duly qualified, (3) the next part contains the lists of Military Assistant Surgeons, Civil Assistant Surgeons and the Sub-Assistant Surgeons, (4) names of distinct practitioners, official and non-official, (5) is an Index—and gives all the names in the book in alphabetical order. The book is wonderfully accurate and is certainly useful.

The Journal of Tropical Veterinary Science (Vol VI, No 1, 1911), has just appeared (March), and is as usual full of interesting matter. We are accustomed to look to this journal for very complete résumés of protozoology and parasitology. In addition, the current issue has several interesting articles, viz., on preparation of anti-rinderpest serum, by other means than the injection of virulent blood. Mr S H Gaiger has a very interesting note on the successful treatment of equine surra by atoxyl and yellow ointment. Many will read Mr F E Place's article on *Kumee* with great interest. There is no doubt that one form—possibly the most common—is caused by a filarial disease of the spinal column and is often associated with worm in the eye. Many years ago we saw cases which led us to believe that cases clinically identical with chronic *Kumee* were due to the continued

consumption of *Kesori*—just as it is well known Lathyrism is due to the same cause. In both cases men and animals can be well described as "gone in the loins."

At the West Hospital, Rajkote, in February last, Capt W D A Keys, M.D., I.M.S., removed by litholapaxy an enormous uric acid stone which weighed no less than 8 ounces and one drachm. The patient recovered. He was 50 years of age. No 17 lithotrite was used, the operation lasted for 3 hours.

MESSRS W B SAUNDER CO., the well-known medical publishers, have sent us a revised catalogue of their publications, giving detailed particulars of many of their famous books. They state they will be glad to send a copy to any medical man on application, and such a catalogue will certainly be found useful by medical men up-country and out of reach of a book-shop.

With reference to the reviews of Major Ross's book on the *Prevention of Malaria*, which appeared in the January and February numbers of this Journal and the subsequent correspondence relating thereto, we have received a letter from Lieut-Colonel H Smith, I.M.S., condemning on the ground of anonymity the letter by "The Writer of the Review" published in the April number. As this is the only criticism offered by Colonel Smith, it is not necessary to publish his letter, it is sufficient to inform our readers generally that Major S P James, I.M.S., has no objection to his name being published as the author of the reviews and the communication entitled "Review of a Review reviewed."

We publish an account of the new Civil General Hospital, Rangoon, in our next issue.

Reviews

Cholera and its Treatment—By MAJOR LEONARD ROGERS, I.M.S., M.D. London, 1911. Henry Frowde and Hodder and Stoughton. Price 10s 6d net.

It is nearly twenty years since, in 1893, Dr A J Wall, I.M.S., published his book on the pathology and modern treatment of Asiatic Cholera, so there was fully room for a new book on this very important disease, which is now supplied by the ever indefatigable pen of Leonard Rogers.

The book is handsomely got up, well printed in good large type and admirably illustrated by maps and neat temperature charts.

The book consists of 236 pages, and is divided into six chapters. The first deals in a clear, yet brief, way with the history of cholera and of the great epidemics which since 1817—1823 have found their way to other countries out of India.

No one now believes that cholera was a new disease when it attracted wide attention in 1817, when it spread from Jessoie to other parts of Lower Bengal and Bihar, and in 1818 was widely prevalent in what we now call the United Provinces and in Madras and Bombay. The curious thing about this historic epidemic was not that it attacked with extreme virulence Lord Hastings' Army in Bundelkhund, but that there had been a marked lull in cholera prevalence for some 23 years, and we may, therefore, presume that it came as something strange and unusual to medical men in that year. It was not till 1830 that cholera reached Russia in Europe and in 1831 came to England by ships arriving in the Medway from Riga.

Major Rogers ably summarises these various great epidemics and illustrates them by maps and discusses the prevailing theories at each time about the disease.

Chapter II deals with epidemiology or the factors influencing the origin and spread of cholera epidemics, noticing the seasonal incidence in the different provinces and refers to Heibert's theory of a cyclical distribution put forward in these columns in 1894. Chapter III is on aetiology and prophylaxis, and if it covers familiar ground it is up to date and complete, in this chapter a full account will be found of Haffkine's too little used inoculation method. The clinical description is ably and clearly written and no point of importance is overlooked. The remarks on the formidable uræmic complications of this disease are especially good, and the practical importance of the relation of high specific gravity of the blood to diminish urinary secretion is emphasised.

The next chapter treats of morbid anatomy and pathology, and the last 68 pages of the book are devoted to treatment, and in these pages will be found not only account of all previous methods of treatment, but also a full description of the author's method by destruction of the toxins in the bowel by the combined hypertonic saline and permanganate treatment.

This chapter alone justifies the purchase of this book, and it is eminently desirable that this treatment which has been found so largely successful in a continued series of cases in Calcutta should be tried on a large scale and in many places. Rogers is very far from claiming his treatment as an infallible remedy for cholera, he well realises the impossibility of saving the extremely virulent forms—especially when they come late under treatment and a fatal dose of toxin has been absorbed.

We can strongly recommend this valuable book to our readers. Every medical man in India has to treat cholera cases and should have this volume at hand to refer to.

Sanitary Handbook for India—By the late Surgeon-Major C J McNALLY Revised and partly rewritten by Major J W CORNWALL, M.D., D.P.H., I.M.S. Fourth Edition Madras, Government Press Price, Rs 2 8

WE are very glad to welcome another revised edition of McNally's *Sanitary Handbook for India*. We have in these columns often reviewed excellent books on public health and hygiene, but few of them have been adapted to Indian conditions and most of them dealt with subjects of comparatively minor interest to the sanitarian in India.

The present 4th edition of McNally's handbook has been entrusted to Major J W Cornwall, I.M.S., D.P.H., who edited also the previous edition. The volume has proved itself of value to many generations of students since its first appearance over 21 years ago and we are of opinion that it is admirably adapted to the needs of Indian Medical Students and to Sanitary Inspectors. The preface says it is written with special reference to the Madras Presidency, but the reader will find it of great use for any part of India.

Major Cornwall has done his work well and evidence of the book being up to date is easily found. We congratulate Madras on possessing this useful volume.

Popular Lectures on Malaria in India—By Lt Col P HEHIR, M.D., F.R.C.S. (Edin), etc Madras Higginbotham & Co, 1911

This ever indefatigable Lieutenant-Colonel P Hehir, M.D., has published another pamphlet on malaria—in the form of popular lectures—which have formed the subject of addresses in various garrison towns in India.

The little book consists of 210 pages and of nine lectures.

We strongly recommend this little volume—it is full of information and is eminently practical. More lectures of this kind all over India would do good and arouse greater public interest in our efforts at malaria prevention.

Amœbic or Tropical Dysentery, its Complications and Treatment—By W CARNEGIE BROWN John Bale, Sons and Danielsson, 1910

In his preface the author states that his object in writing this work is to give a general survey of the information regarding amœbic dysentery which is so scattered through scientific journals in a number of languages, and full details of the treatment of the disease. He has succeeded to a large extent in attaining his object, while the numerous references will enable readers to consult the original papers for further information. In describing the causative organism he

adheres closely to Schaudin's description and only briefly mentions Noc's observations in Cochin China, although the latter are far the more accurate as far as Indian experience goes. The differences between the harmless *Entamoeba coli* and the pathogenic *Entamoeba histolytica* are those usually described but as the author admits the subject is still in its infancy, and it is doubtful if anything except the divisional forms in stained specimens will allow of the certain differentiation of the different species.

In a work confined to the subject of amoebic dysentery, we had hoped to have found a clear clinical differentiation of the disease from the bacillary variety, but the author tells us that the diagnosis can only be made by finding the pathogenic organism in the stools, this is also in accordance with Indian experience at the present time, although it is to be hoped that by close combined clinical and pathological investigations this defect in our knowledge will before long be remedied. The morbid anatomy is well described and the histological changes illustrated. In the frontispiece is shown an uncoloured reproduction of Rogers' plate from the *British Medical Journal* but by a curious slip, in the most diseased area, the healthy parts have been marked as diseased and *vice versa*, and the ulcers described as being depressed with overhanging margins, whereas their most characteristic feature is the markedly raised nature of the affected parts in this acute stage! The treatment is very fully described and the many details will be of service to medical men on first going to the tropics. We must, however, take exception to the statement that ipecacuanha is "inadmissible" in the acute stage, as in Indian experience full doses of this drug afford the only chance of recovery in the worst cases, and we have repeatedly seen very serious cases, in a typhoid-like condition and passing large sloughs of the mucous membrane, completely recover under such treatment, although if complete gangrene of all the coats of the large bowel has occurred before admission no treatment can possibly be effective. Liver abscess and the other complications of the disease are briefly described and the value of ipecacuanha in preventing the former is mentioned. The method of treatment liver abscess by aspiration and injection of quinine without drainage is stated to be sometimes useful in small abscesses, so presumably this was written before the issue of the second edition of *Fever in the Tropics* with reports of success of this method in liver abscesses containing up to six pints of pus. Dr Carnegie Brown has done a service to tropical medicine by publishing a useful summary of the present state of knowledge on a difficult and important subject. His book will be of great assistance to workers in the tropics far from good scientific libraries.

Modern Surgical Technique—By C YELVERTON

PEARSON Second Edition 42 Coloured and other Plates and 129 Illustrations John Bale and Danielsson, Ltd Price, 10s 6d

THIS book was reviewed in these columns on its first appearance some three years ago, and it is the best testimonial to its excellence and practical utility that a second edition has been found necessary. The entire work has been revised and new matter introduced where it appeared desirable. The second edition is in every way a worthy successor to the first. The author treats his subject from a wide standpoint and is no faddist or advocate of particular methods, and while he gives clearly in detail the procedure he usually adopts he also includes the experience of other surgeons. The subject-matter is well arranged in twenty-six chapters and four parts, dealing with Preliminary Considerations, Prophylactic Disinfection, Wound Technique and Operative Technique. We strongly recommend it to our readers, for while its careful study will well repay the trouble, it should be invaluable as a work of reference to all practising surgeons. Amid the flood of new books this is one of the select band which thoroughly justifies its publication. It is clearly printed in large type, with good illustrations.

Urine Examination Made Easy—By THOMAS CARRUTHERS

Second Edition London J & H Churchill Price, 1s 6d net

THIS is the second edition of a useful little book originally intended for use of nurses, though why nurses should test urine we do not see. It is certainly desirable that they should know how to prepare a specimen and take a catheter specimen in females.

Full instructions are given on these matters and Section B on how to examine the specimen is clear, short and explicit, and nothing could be simpler than the direction for ascertaining the reaction, odour, appearance, etc.

We can thoroughly recommend this little book for the use of students and in hospitals. It is cheap, practical and accurate.

The Non-Surgical Treatment of Duodenal Ulcer.—By GEORGE HERSCHEL Published by Henry J Glaisher Price, 1s

THIS little volume is a reprint of an article which appeared recently in the Clinical Journal. It is a valuable and suggestive contribution to the therapeutics of a much discussed and little understood condition, and will well repay perusal. We question, however, if a surgeon's aim in performing gastro-enterostomy, is the diminution of the acidity of the gastric juice, "by allowing a regurgitation of bile and pancreatic juice into the stomach."

The Story of the Bacteria—Prudden Second Edition G P Putnam's Sons Price 3s 6d

A semi-popular account of the rôle that pathogenic micro-organisms play in the vital economy. It is written in a pleasant descriptive style and may be read with advantage by both scientific and lay readers. It is well illustrated and printed in clear large type.

Surgery (Part I) and Gynecology—Catechism Series E & S Livingstone, Edinburgh Price 1s each

These small tutorial note-books are published with the object of enabling the student to revise his work on the eve of examination, and as such fill a useful place. They should also prove useful to a busy examiner. The matter in the form of question and answer is well arranged and the printing good.

Manual of Bacteriology.—By MUIR and RITCHIE Fifth Edition Henry Frowde, London Price 10s 6d net

This latest edition of the well-known "Muir and Ritchie" fully maintains the high standard of excellence set by its predecessors. The six new coloured plates illustrating the commoner bacteria and protozoa concerned in the production of disease are a valuable addition, and it is to be hoped that their number will be increased in future editions. The book has been thoroughly brought up to date, and it is specially pleasing to find that the causal parasites of tropical diseases have received their fair share of attention. Only three years have elapsed since the appearance of the previous edition, but much has been done in that time and both the body of the book and the appendices show that the authors have made a careful and judicious selection of the work that is of most importance and that is best authenticated.

One appendix deals with the three known varieties of the *Leishmania* parasite and another gives a short account of the *Phlebotomus* Fever, in the course of which the authors suggest the possibility that Dengue, Seven-Day Fever, Chittagong Fever, and others of a similar nature may be identical. There is every reason to believe that "Muir and Ritchie" will continue to hold its place as the most popular manual of Bacteriology in the English language.

Practical Bacteriology and Blood Work and Parasitology—By E R SMITH, Surgeon, U S Navy Second Edition Pages 350 Price 6/6 net Publishers, Lewis, London

This is a handy little book which contains instructions in the practical methods of clinical examination of the more important animal and vegetable parasites which are responsible for the causation of disease. The subject is dealt with from the point of view of a worker in the tropics

and so will be of special value to medical men in India.

The subjects included are Bacteriology, Blood Examination, Parasitology, Entomology and Clinical Bacteriology, and they are all dealt with in a practical manner. The book is well illustrated and very moderate in price and can be strongly recommended to the worker in the mosquito who has not a large library of books at his disposal and who nevertheless wishes to investigate his cases by modern methods.

The Bradshaw Lecture on Cancer.—By Sir ALFRED PRAGER GOULD Price 3/6 net

This little volume is likely to find a place on the bookshelf of the distinguished author and of his personal friends, but as the subject-matter has already appeared in the medical journals it is not likely to command a large sale among the general public.

The lecture is very interesting and stimulating, but doubtless most of our readers have already made its acquaintance.

SPECIAL ARTICLES

I

A NORTH EAST FRONTIER EXPEDITION

Now that our N.E. Frontier is yearly gaining in strategical and political importance, a few notes culled when with a Field Hospital during the recent Ippimaw Expedition on the China Frontier of Burma may not be out of place for future guidance.

For the sake of brevity these may be put under the headings of Climate, Transport and Medical.

Climate.—North East of Myitkyina, a vast range of mountains towers which only allow of operations between the months of November and April and even within this short period rain and snow add to the difficulties of a densely wooded country. The heights are bitterly cold and if it does not actually rain, the very heavy night dew behoves all to wear their warmest Field Service clothing, and to take either rain-proof sheeting or the stoutest of valises. Myitkyina was our base and when we left it to cross the Irrawaddy, we were in the country of the Kachins Marus, and all traces of civilization were left behind us. After a four days' march, we arrived at Tumpang, a small fort on the banks of the rapid flowing Namlee, and here a small dépôt was made. We then trekked on to Nango a six days march, and here our difficulties began for the going for animals and men is none too good owing to its being made up of a series of steep ascents and precipitous declines varied here and there with a Kachin village situated high up on the edge of some hill paddy-fields. Nango is another recent fort and is situated some 5,000 feet

up from which can be seen the dreaded Wumaw-Bum Soaring up to 8,000 feet behind which again can be seen the snow-capped ridge running practically North and South, which forms on the one hand the watershed of the mighty Salween River, and on the other, the Burmo-Chinese boundary line This ridge runs up to 14,000 feet and on it lies the Hpmaw Pass at 11,000 feet, which was the goal and aim of the column, the roads being exceedingly difficult for transport Nango was made the base for the Heavy Section of the Field Hospital, and the Light Section proceeded on the seven days further march to Htawgaw which is a fort high up, commanding the Hpmaw and Hparé valleys

Transport—Transport in these hills densely covered with jungle, with only narrow paths to guide one, sometimes skirting tremendous *khuds*, at others dropping down to steaming torrents or trailing wearily in zigzag fashion up some mountain ridge, is, if you have none but the best of mules and the lightest of loads, like the labours of a Hercules or the trials of a Sisyphus For the paths are rarely over two to three feet wide and are broken by numerous boulders or upstanding roots, and many are the times that the hospital kit becomes unshipped and damaged Indeed I know no more despairing sight than on a slippery incline to see Field Hospital boxes go bumping-thumping down a dense jungled *khud*

In such a country it is well to rely most on the Light Section and to so adjust the contents as to make each load at least only 60 lbs, for instance splints are unnecessary to take, for with a very little knowledge of woodcraft, the most excellent Gooch or other splinting can be made out of the bamboo everywhere at hand Doolies again are an impossibility and even a danger owing to small zigzags and the steep gradients of the hills Blanket stretchers are better, but best of all are two Kachin methods, the one, in which the sick man is carried on the back on a bamboo platform in a sitting or prone position, the weight of the load being borne by a strap over the forehead, the other in which cane is laced between two bamboo poles, the ends being separated by struts Whilst the pole handles are supported on the shoulders, leaving the hands free for assistance or for a *khud* stick The "Kahars" with the Military Police column are all local Kachins enlisted for the purpose, and they carry out their duties with apparent ease and freedom

Again, owing to the rain or dense dew tentage becomes so heavy that when an early start has to be daily made before the sun rises over the snow-capped peaks it will be found impossible almost for the mules to manoeuvre the roads with a wet 160 lb tent on its back (which weighs 190 lbs) I would then advise that in this mountain country all tent poles, mallets and pegs be left behind as the local jungle will supply all these on halting and your mules will keep fit where others die A 160 lb tent canvas by itself only weighs 84 lbs I have already mentioned the narrowness of these

hill paths and their steepness, it will be then understood that such a cumbersome burden as two kajawahs on a mule, is an impossibility without constant mishap Indeed for these hill paths no load should project more than 18 inches from the mules side These remarks also holding good for the "Kanat" and Arsenal boxes

Medical—On this expedition there has been fortunately little serious sickness, all troops keeping remarkably fit despite the wet and cold Naturally, there is little malaria at these altitudes, and fever does not seem to be common among these people either Though it would appear that quite 70% of the population suffer from simple goitre for which neither by medicine nor operation do they seek relief It is a land where only the fittest can or do survive and where modern medicine would have to contend with the most tenacious belief in the powers of witchcraft, etc For the transport of the abler sick, we had riding mules and hospital riding saddles, but luckily they were rarely needed owing to the able sick preferring to walk the gradients rather than desperately grasp the saddle with both hands and knees

V GREEN-ARMYTAGE

March 1911

CAPTAIN, I M S

II

A MODERN HOSPITAL FOR THE INSANE

WHilst on a tour to the Continent in April and May 1910, I made one of a large party of English speaking medical men mostly American which visited the very fine Hospital for the Insane of Lower Austria recently erected at Stenhoef on the outskirts of Vienna

The institution is placed on the flat top of a low hill commanding a full view of the beautiful country around We arrived at 10 o'clock one morning and were shown typical cases of insanity, one of the medical staff then escorted the party round the pavilions and to the chief places of interest There is accommodation for 3,300 patients in some sixty separate buildings The site covers probably several square miles, and some idea of the size of the place is indicated by the fact that there are fifty miles of roads of communication on the estate There are separate pavilions for refractory cases infectious diseases and tuberculous lunatics The pavilions are arranged in series of lines, the administration block, the kitchen building, and the church being placed in the centre The grounds are spacious and being well laid out with trees, shrubs and flowering plants The wards of each pavilion are lofty, light and well ventilated, and pictures and coloured prints, copies of famous paintings, freely cover the walls The sanitary arrangements are excellent All evidence of forcible confinement was absent

Each pavilion has a fine verandah closed with strong wire screens Except in the case of the

pavilions for the violent cases there is nothing to prevent the patients who are not confined to bed from walking anywhere in the grounds. The large kitchen block with sculleries, dining rooms for the servants, etc., serves the whole institution except the paying patients' department, which has its own kitchen. The most recent and approved labour-saving methods of cooking and cleansing are in force. The food appeared to be ample and of excellent quality—so excellent that several hungry Transatlantic confidées could not keep their hands off the cakes which had just been made. The food is conveyed from the kitchen to the different pavilions in boxes made of aluminium, and wood, and cork is used to surround the food receptacles in order to prevent loss of heat. The boxes are carried by an electric train to each pavilion where they are received by the servant responsible and at once served to the patients, we are informed that not more than $\frac{3}{4}$ of an hour was spent between the time the food left the kitchen and the time it reached the patients in the furthest pavilion.

An imposing church of marble and a fine entertainment room with a stage where plays and concerts were given were other features of the institution.

The quarters for paying patients are comparable with the finest modern hotel. The patients pay from 6 to 20 kronen (5 shillings to 17 shillings) a day. Tastefully designed and furnished, they are equipped with everything that seems necessary for the treatment of the insane,—mechanical (Zander) appliances, light baths, electric baths, swimming baths, etc.

Though much of this would be far beyond the needs or possibilities of India, the general conception of the scheme and the method in which it had been carried out seemed to offer much matter for consideration to any one interested in the planning of a lunatic asylum in any country, and for that reason it is brought to the notice of the readers of the *Indian Medical Gazette*. There is probably nothing better as a hospital for the insane in Great Britain, and most of the Americans agreed that there was nothing better of the kind in their country—conclusive evidence of the excellence of the institution.

M H THORNLEY,
CAPTAIN I M S

Current Literature

SURGERY

HERZLER (*American Journal of Surgery*, July and August 1910) publishes an exhaustive article on local anaesthesia. One of the essentials is a

well made glass syringe. As regards cocaine he prefers a 4% solution for external use since the thorough application of a weak solution gives better results than a stronger one timidly applied. For skin infiltration and nerve blocking a $\frac{1}{2}\%$ solution is employed. The anaesthetic of choice is, however, quinine and urea hydrochloride, other soluble salts of quinine are also effective local anaesthetics the dihydrochloride and the bisulphate giving good results. The action of a soluble salt of quinine in the tissues is as follows.—An exudation is caused, at first amorphous but which soon coagulates forming a granular fibrin. It begins after a few minutes and is complete in a few hours. The infiltrated skin is thickened and reddened but is not tender. The granular fibrin produced by the injection is not organised into adult fibrous tissue but is absorbed after one or two weeks.

If the skin is injected and it once incised the quinine solution escapes into the wound and the fibrin formation does not take place, anaesthesia is of shorter duration and wound healing takes place as if no local anaesthetic had been used. Anaesthesia does, however, last for several hours.

Where primary union is not possible and prolonged anaesthesia is desirable it is important that the solution be allowed to remain in the tissues as long as possible to allow of the formation of the exudate. This exudate by its pressure prevents after oozing and to a certain degree the hemorrhage of the operation itself.

When this infiltration takes place anaesthesia lasts from several days to two weeks or longer. These effects are desirable when primary union cannot be obtained and pain is a prominent feature, e.g., operations about the anus. For local use on mucous membranes solutions of 10-20% are employed, any desired amount may be used. The bladder may be satisfactorily anaesthetized with quinine solution. For injection a 1% solution is sufficient to produce anaesthesia under any conditions but weaker solutions if skilfully employed are efficient. Quinine is employed either for infiltration or nerve blocking and but rarely for ademization. As soon as the injection is completed the operation may be begun. An exception to this general statement must be made in the case of peripheral blocking when anaesthesia may not be complete until after several minutes. If prolonged anaesthesia is required or where post-operative oozing is to be prevented, then the operation is not begun until 5-30 minutes after the injection. This permits the formation of the fibrous exudate. The writer prefers not to add adrenalin to his cocaine solution since he believes the disposition to ooze after the effect of the drug has passed off is greater. In some operations done under general anaesthesia the injection of quinine about the area operated upon will materially reduce the after-pain of the operation.

Bentley Squier (*American Journal of Surgery*, July 1910) discusses the end results of prostatec-

tomy he is convinced that more brilliant functional restoration is obtained by the suprapubic rather than the perineal route. Whatever operation is done, the ultimate result is largely dependent upon the care and attention paid in clearing up existing cystitis and leaving the urethra in a healthy condition.

As far as the operation is concerned, the indication is definite total removal of the prostate with no damage to the compressor urethrae muscle. Permanent post-operative incontinence of urine is dependent upon the condition in which the compressor urethrae muscle is left and damage to it is more likely to follow an infarctive than a suprapubic operation.

Temporary incontinence is common and is due to cystitis and deep urethritis plus the relaxed condition of the sphincter following operation. A case of permanent incontinence was described in which a modified Bottini operation had been previously performed through an external urethrotomy wound. A calculus and a large quantity of residual urine were present. The calculus and prostate were removed suprapublically, the latter with some difficulty on account of the scar tissue in the prostate from the cauterization. Incontinence followed, which the writer believes was due to the scar of the cauterization interfering with the function of the compressor urethrae muscle.

Retention of urine may be the end result of a prostatectomy being caused by nature's reparative efforts. During the contraction of the cavity left after the removal of the organ a flap of mucosa may be pushed up so as to act as a valve obstructing the internal meatus. A second cause is cicatrical stenosis of the vesical neck which comes on insidiously and can be treated by incision and division followed by the passage of sounds. Keyes, J. (American Journal of Surgery, July 1910) publishes a preliminary report on the treatment of bladder tumours by the high frequency current.

There is a well-known distinct tendency for papillary tumours to multiply in the bladder by contact, and there is, moreover, a distinct danger of tumour implantation during operation either at the point of removal or in the suprapubic wound itself. These relapses have tended towards the production of instruments for the intravesical removal of tumours. These instruments are effective with a skilled operator, but the inventor is usually the only man sufficiently skilled to manipulate it with success.

An operation which does not require general anaesthesia or incision and may be repeated with relatively slight inconvenience to the patient possesses many advantages, for these reasons the writer constructed an apparatus for the application of a high frequency current.

It consists of a small insulated cable about the size of a No. 6 ureter catheter and can be used through any modern catheterizing cystoscope. The wire is attached to a high frequency current

apparatus introduced into the bladder through the cystoscope and manipulated therein after the manner of a ureter catheter.

Dr. Beech had employed the ovoid or single pole high frequency current but this short circuited through the writer's cystoscope, this difficulty was later overcome. At first the D'arsonval or double pole current was used with one pole in the bladder and the other in the patient's hand, later both poles have been placed in the bladder tying the ends together and using them as a double ureter catheter.

It is very difficult to measure the electrical strength of this high frequency current. The writer's experience was that if only one pole is in the bladder a vastly stronger current was required than one could stand upon one's skin in the open air. With both poles in the bladder a current strong enough to burn the unmelted skin is quite sufficient for the bladder. The electricity acts as a very convenient form of cauterization. The wires must be in absolute contact with the tumour, one gets as near the base of the tumour as practicable, plunges the wires in and then turns on the current. The average duration of the burns used by the writer has been 5-10 seconds. Five cases have been treated, two cases were of inoperable carcinoma and no definite good resulted.

A third was recurrence after a suprapubic removal, the tumour was destroyed but too little time has elapsed to speak definitely, a fourth of multiple papilloma with two burnings the first destroyed about a third of the largest growth.

The case reported in full was one of a large villous tumour removed by a suprapubic operation, from the pathologist's report, which was that the tumour was a pure papilloma but the apparently normal mucosa round the base shows papillomatous changes to its edge, the writer was afraid of an inevitable recurrence. Cystoscopy two months after the operation showed the scar to be covered with a whitish looking material suggesting adherent granular phosphates and round it great fingers of edematous mucosa. The ureter catheter was run into this substance and showed that it was formed of every minute papilli. The burning treatment was applied several times and after about six weeks there was a very marked improvement and six months later there was only a doubtful small papillary filament projecting.

Correspondence

RUBBER GLOVES IN MODERN MIDWIFERY PRACTICE IN INDIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—The forcible paper* by Major Budwood demands more consideration than perhaps the average practitioner in India, whether European or Indian will give it. He

ightly lay stress upon the use of *rubber gloves*, but scarcely recognizes how very limited such use is at present. It would be interesting to know if they are in regular use in 10 per cent of the chief hospitals of North India, or in 1 per cent of the hospitals in Charge or Indian Assistant Surgeons. From a fairly wide opportunity for seeing them I think the above is an over estimate. In any case the use of rubber gloves in this country is yet only beginning. One reason stands prominent, in a tropical country they perish quickly, and are difficult to replace.

At one hospital I enquired for them, and found several pairs as stiff and as brittle as sheets of gelatine. At another they were produced from a well made box, where they had been exposed to kerosene oil vapour. All the rubber goods so kept were soft and pliable, but also the gloves were too soft, and tore very readily. But they were at least 1½ years old.

I would suggest that the firms which export gloves should print the date of manufacture upon them, just as tyre manufacturers do, and that at least one Indian firm make a speciality of the supply so that one may know where to apply for a fresh reliable article.

Major Budwood's suggestion as to ordering a few months a head is a practical one.

I would again mention the value of a box, with a well fitting lid, and shelves, at the bottom of which is a small open cup full of kerosene, all rubber articles should be kept on the shelves of this, and will last well. Rubber gloves require personal attention. If boiled within an hour or so of operation, or if incinerated long in lotion, they are far more easily torn, and less elastic.

I think the best way is to boil *after use*, dry with a sterilized towel, store in sterilized talc powder, and when operating wash the hands as if no gloves were to be worn, fill the gloves with weak lysol or other antiseptic solution and slip them on then carefully clean the gloved hands, in Haington's solution or other strong lotion, and rinse this off with saline or any very weak antiseptic.

If by mischance the glove finger gets punctured or torn during manipulations this method is a safeguard against infecting the wound, and I dip the finger into a stronger solution so as to guard still further.

I am
Yours faithfully,

ARTHUR NEVE F.R.C.S.E
Kashmir Mission Hospital

P.S.—Much might be done by an Inspector General of Civil Hospitals to extend the use by enquiry and personal inspection.

BLOOD PRESSURE IN NATIVES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I shall be indebted to you if you will very kindly bring the following questions before your readers:

(1) Is the normal systemic blood pressure the same in natives of India as it is in Europeans?

(2) If not, what may be assumed to be the normal (average) blood pressure in native patients?

(3) Are there any published or unpublished records of experiments undertaken to settle the above questions?

I shall be most grateful for any information your readers can afford me on the subject.

Yours faithfully,

R H ELLIOR, F.R.C.S.,
MAJOR, I.M.S.

HILL CLIMATES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In reply to the query regarding Hill Health Resorts in India by B N Ghosh, L.M.S., in March issue of your paper we think that the book "Treatment of Disease by Climate" by Dr R M Narain, L.M.S. (retired) fully deals with the points mentioned. It deals with the principal factors which determine Climate, Divisions of Climates, Indian Hill Sanatoria, and Diseases beneficially influenced by Climatic Treatment. The first two sections answer well the questions put forward by Dr B N Ghosh.

Yours, etc.,
PUBLISHERS,
Practical Medicine

GALL BLADDER AFFECTIONS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In connection with Captain Baker's article on "Affections of the Gall bladder and Bile ducts," in the March issue of your esteemed Journal, I feel inclined to write

a few words regarding an experience I had in February last. The conspicuous absence of novelty is my only apology.

T G., aged about 43, a Eurasian Veterinary Surgeon, in H H the Nizam's Service, was subject to periodical pain in the abdomen for 5 years and it was put down for a manifestation of gastric or duodenal ulcer by some of the leading men in Hyderabad, Bombay, Poona, etc. All advised operation, and with this end in view he was sent to the Mill Mission Hospital. Dr Wanless apparently concurred in the above opinion and gave T G. to understand that operation was his only chance. Seeing that there was no other alternative but to submit to the unsympathetic knife, he asked for a little grace time and came to Castle Rock to see his brother in law who is a Government official here. Just then I happened to be in the station (having halted from a duty tour) and was sent for to see T G. On examination I found the patient in, what was described to me, the throes of an agonising pain. By dint of perseverance (the patient was inclined to howl rather than answer silly questions), I made out that the pain was acute and diffused all over the hepatic area embracing particularly the region of the stomach, the pain recurred in every 2 hours and distinctly after meals. There was no fixed tender point, the whole anterior abdominal wall being reflexly sore. An hypodermic injection of a ¼ of a grain of morphia allayed the pain considerably, and this he was in the habit of taking as a routine, though temporary measure. The history is a patchwork, but I will endeavour to give an idea, at least, of what I understood.

Five years ago the patient had a couple of wets of practically raw whisky followed by a couple more of an "apricetizer," probably gin. He felt very queer after finishing a hearty dinner at which indigestibles predominated, with the result that he vomited blood twice the same night. Stretching his memory to what he termed, the "night of indiscretions" he estimated the quantity of blood to about 1, or 1½ ozs each time. Surgeons put this down to an ulcer eroding an artery with resultant hemorrhage, but as the result of my treatment proved this was in consequence of gastritis the raw whisky produced. The apretizer too unfortunately proved quite the contrary. From hence he dated his pain and fully believed it to be a symptom of an ulcer somewhere down his "fuel box."

Having read a lot of literature of gall stones and biliary concretions, I jumped to the conclusion that the ease in hand must have some connection to the above genealogical tie. Strange as it sounds this conclusion came to me naturally and working upon hypothetical grounds I argued in favour of my pet theory. In favour of ulcer was the initial hemorrhage, the periodical pain having a relative regard to food, absence of jaundice and liver enlargement, stool normal in colour and consistency although inclined to be constipated. Very clean tongue tenderness extending over the stomach, the age, acid eructations, vomiting of food, etc., and above all the opinion of men who knew a lot more than me. In favour of gall stones I further argued, I had only one or two supposed symptoms to work upon, but these seemed to me to be all sufficient to justify me to wage a drug war with an over active gall bladder.

Second day—A stiff dose of calomel and oil was administered with olive oil at bed time.

Third day—No change, pain more pronounced. Repeat.

Fourth day—Bowels perfectly free, pain unbearable. Slight rise of temperature. Vomited twice. Repeat all.

Fifth day—Had a stool in the morning passed 64 stones of varying hues, shapes and sizes. Pain markedly decreased, periodicity broken and the patient kept on passing gravelly stuff in every stool. The pain returned slightly in about a fortnight, but since then everything seems quite normal. He is back in Hyderabad, working on horseback and occasionally writes to me, thinking me fit for discovering this painful though precious mine of Golconda in his "fuel box." I consider a year sufficient to judge in.

CASILL ROCK, }
25th March 1911 } D C PHILLIPS,
Asst Surgeon

MILITARY ASSISTANT SURGEONS' MEMORIAL

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Encouraged by past courtesies, I write to ask you very kindly to give me a small space in your columns with a view to enquiring from your numerous readers if any one can throw any light on the fate of the memorial submitted by the Military Assistant Surgeons through their immediate superiors. As it is much regretted to find that some of our more favoured brethren in civil employ have not even been favoured with an acknowledgment of its receipt from the office of the Administrative officer of their Province.

Yours faithfully,
MILITARY ASSISTANT SURGEON.
know that this memorial is now under consideration—
Ed., I.M.G.]

A RATIONAL PUERPERIUM

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I am anxious to draw the attention of all interested in the 'Management of the Puerperal State,' to an article entitled "A Plea for a Rational Puerperium" in page 511 of the Medical Annual for 1910, and to enquire how far the method explained therein is followed in Indian Hospitals.

The arguments put forward in favour of making the puerpera sit up or walk about as early as she feels inclined to do so, appeal to me to be sound.

Yours faithfully,
MOUNG NEE,
Civil Hospital, Thanawaddy, Burma

MILITARY MEDICAL SUBORDINATES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—The question of pay and prospects of the Civil Department has now become a settled fact, whereas the improvements of the Military Medical Subordinates are still hanging fire and the decisions of the Government of India are awaited with intense anxiety. If the matter is still under the kind consideration of the benign Government, I beg respectfully to suggest that, along with the increased rate of pay and change of designation, we should be graded under a substantive rank in the Indian Army. The existing rank as Native Warant Officers is an anomaly in the constitution of the Native Rank and File. Though it compares well as a counterpart with the constituents of the British Army, yet among the Indian Troops with which our services are intimately connected, it carries no weight. In practice we are classed below Jemadar—the Native Officers of the lowest rank and, as a matter of course, we come under the category of Havildars—native non commissioned officers. In the Army Regulations we are placed under this class for grant of compensation for deafness, sea kit, war gratuity, etc.

A sepoy, in the course of eight or ten years of service rises to the rank of a Jemadar and the Hospital Assistant has often to face the mortification of seeing his position dwindle down to inferiority, when Havildars who are deputed as orderlies under him in the hospital, come to be promoted direct as Native Officers within a short space of time. The Medical Subordinate in such cases finds himself nonplussed, for the men who were below his rank have become not equals but superiors who are to be treated with due respect. We do not in any way grieve the prospects of the non commissioned officers but we have every sympathy with them. The reversal of a Hospital Assistant's position and his predicament to stand in awe of one whom he commanded some months back, are conditions better imagined than expressed. The non commissioned men are promoted direct to native commissioned rank without any intervening grade as Warant Officers. The medical subordinates during their time of pupilage, are ranked as Havildars and after four years of training, they are drafted into the warant grade. But a sepoy, who rises from the ranks into non commission officerhip, is given a direct promotion to Native Officer's rank and thus the warant grade does not apply to any section of the Indian Troops except the medical. Though certain privileges are granted to the medical subordinates on the same footing as Native Officers, yet our position between two substantial ranks of the Indian Army is productive of untold misery and degradation, for we are neither a Native Commissioned Officer nor a Non Commissioned Officer. Under these circumstances, we respectfully move the authorities to abolish the warant grade and give us the substantive rank of Native Officers on our entry into service after four years of pupilship in the rank of Havildar.

BIRMA,
28th September, 1910Yours faithfully,
D M

LABORATORY WORK IN MILITARY HOSPITALS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In thanking you for your usual courtesy, may I crave your further indulgence for the publication of this letter in your valuable columns as soon as convenient, and it is to be hoped that our all wise Government will give it their kind and early consideration and solicited approval.

Considering there is so much bacteriological and other laboratory work attached to military practice in Station Hospitals and that this always requires a ready supply of efficient Assistant Surgeons to assist medical officers in charge of this branch of medical work, would it not be a wise step to inaugurate a tuition class at the Pasteur Institute at Kasauli, the period and extent of training being fixed by one Director of this Institute where even as in the X Ray

Class at Dehra Dun medical officers themselves who may be desirous of undergoing any special instruction may also be privileged to attend. The results as to after efficiency of candidates would of course be determined by an Examiner or Board of Examiners who would be nominated by the Director and a certificate of proficiency could be granted to each successful candidate. Inevitably, this would add to the already strenuous duties of this able staff, but would not the benefit that would accrue from it very much outweigh this since it would offer truly efficient and capable men.

Under the present system of medical education in the colleges of Bombay, Calcutta, and Madras, Military Medical pupils receive little or practically no training in bacteriological work and one would not deny that the few amongst us who are at all acquainted with the minute details of laboratory principles are necessarily of an energetic and "pushing" character. Sometimes, under exigencies of the department, one of these "unfortunates" is landed in a Brigade Laboratory much to his own discomfort and perhaps more so to that of the Medical Officer in charge. The consequences of this are better imagined than explained, and it is in a case like this where innumerable difficulties would and often do naturally arise.

Once a man duly qualified comes out of Kasauli, he could be placed either in a Divisional or Brigade Laboratory according to requirements and in order to afford encouragement for study, this appointment might be made tenable for a period of, say, two years as in the case of X rays, or even more—until some other eligible substitute is found. Of course for men attached to Divisional Laboratories, I am sure the Government of India could see their way to sanctioning a special allowance of, say, Rs. 30 per mensem as for the X rays subordinates, and for those employed only in Brigade Laboratories no pecuniary allowance need be granted (except perhaps in the case of the Independent Brigades), for their work would not be up to the same extent and degree, but local arrangements could be made by the Officer Commanding the particular hospital such as exemption from certain duties whereby they would be given the time and encouragement to carry out their work not only conscientiously but also interestingly and therefore profitably to the hospital itself. As vacancies arise in the Divisional Laboratories, those from the Brigades in question could be promoted according to seniority and merit together considered.

Perhaps, the suggestion to fill the Brigade Laboratories with specially trained hands would to some appear superfluous, but to those acquainted with all possible exigencies of the military medical service it would, I am positive, commend itself beyond limitation as not only necessary but also as serving to facilitate Laboratory work and duties.

No doubt some would contend that the supply would possibly be in excess of the demand, but apart from the Controlling Power of the Army Headquarters in electing candidates for study, would it not tend to improve the educational standard of the department as a whole, thereby forming a valuable asset as a possible maximum would always be in the process of being brought up to modern advancements and methods? In addition, it is not every hand who qualifies from Dehra Doon in X rays, for instance that at once secures the special employment he has, probably with financial and other troubles trained himself for, but it is an unquestionable fact that many have to wait their opportunity for years, so that this objection need not be held applicable here either. Classes could be held on the same lines as at Dehra Doon, i.e., one or two batches of students at a time during the year, and volunteers called for from the various Divisions which I am certain would meet with hearty response from most Asst Surgeons. On the other hand, to keep the expense to the State at the lowest possible minimum I would even suggest that classes be established also at Bombay (Patel) and Conoor, and so many divisions told off to each institute according to proximity and other considerations of convenience, moreover this particularly would hardly increase tremendously the labour of the staffs at the various institutions and I would propose that a uniform course, and subject of study and practical training be drawn up for adoption in the three centres (subject of course to amendment and alteration as circumstances might necessitate) so that the Assistant Surgeons qualifying would always remain more or less at a uniform and unvarying value and degree of efficiency. As regards the construction of accommodation for those Assistant Surgeons detailed for this study, I do not think there need be any urgent objection on this score as they would be in receipt of compensation for quarters and could go into board and lodging similar to what obtains at Dehra Doon. Of course from the point of view of convenience special quarters will be extremely desirable, but this could be executed later if finances permit. Indeed, if there be any intending candidates who would raise serious objections to enduring a trifling inconvenience when the prospect of obtaining a sound education in Bacteriological principles holds out on the other side, I for one should not demur to condemn them at once as unwholesome units.

unworthy even of the most trifling attention. In conclusion, some of these so trained hands would always be available for employment at the Institutes themselves in cases of necessity which at least would be something desirable. It is hoped that administrative medical officers will analyze the question carefully and lend us their support by moving the Government to execute the project.

Apoloizing for writing at such length

STATION HOSPITAL,
ADEN }

I am, Sir,
Yours, etc.,
B J BOUCHE,
Military 1st Surgeon

A CASE OF TETANUS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

Sir,—You will be good enough to give me a little room in your Gazette for publishing the following interesting case of tetanus, and the treatment adopted, which resulted in complete recovery. Every medical man of experience knows very well, what is the fate of the patient suffering from tetanus, always the mortality is very high. During my experience of last ten years, I have seen many cases of tetanus but unfortunately it has never come to my lot, to have seen a case completely cured of course. Many cases have been reported to be completely cured by treatment with antitoxin.

A girl, aged about twelve years, was brought to the Civil Hospital, Godhra, on the morning of the 9th September. Hospital Assistant on duty informed me at once, that there is a case of tetanus waiting outside. I at once saw the patient and observed the following facts—

There was a small abscess on the great toe of the right foot, which resulted from a prick of a piece of bamboo twelve days before and for the last two days, she had been in the condition described below—

Her looks were very anxious, there was typical *Risus Sardonicus* (as described in books), the mouth being completely shut. Her body was in an opisthotonic condition, the convulsions were very powerful and tonic occurring at every 3 or 4 minutes and lasting for half a minute. The temperature on admission was 100° F. Every 3 or 4 minutes the whole body was thrown in powerful tonic contractions putting the little girl in the most wretched painful condition. On the whole, outlook and prognosis was very bad.

The following treatment adopted—

I Anti-septic cleaning of the foot

II Chloroform inhalation for operation only

III Amputation of the great toe, keeping the wound open to drain aseptically

IV Intraspinal injection, after lumbar puncture, of sterilized solution of magnesium sulphate, 25 c.c.

V Nursing, with milk diet only

Description, with some points in detail

It was with very great difficulty, the patient's relations agreed to allow me to amputate the toe. I explained to them that if the toe is not removed the girl will surely die. I gave them a little idea about the cause of the disease and explained what will happen after the amputation.

Patient was chloroformed and the foot was thoroughly cleaned in the usual way (i.e., soap, turpentine alcohol), and the foot was kept in 1 in 10 carbolic lotion for some time. During this time I cleaned the lumbar region, and made the lumbar puncture in the third lumbar space a little to one side, the direction of the needle a little upwards and inwards. Of course I expected a free flow of spinal fluid, but to my surprise, no cerebro spinal fluid came out. I reassured myself whether I was in the proper place or not, but I was quite confident that I was in the subdural space. I injected that sterilized solution of magnesium sulphate 25 c.c. Took out the needle and sealed the wound with collodion and cotton.

After this I amputated the great toe in no time and kept wound practically open and dressed aseptically and patient put to bed.

What was the effect of the treatment adopted on the very day?

Marked effect on the convolution. Convulsions did occur but instead of at the interval of every 3 or 4 minutes they occurred at the interval of 3 or 4 hours. Duration also became very short.

Muscles of the jaw relaxed, the mouth opened. The most important advantage gained was in feeding, the patient took food, fed nicely and properly.

Next day the patient was still progressing well. Convulsions did occur, but at much longer intervals the patient was comfortable and much better, fed herself nicely, and I did not think it advisable to repeat the process of lumbar puncture with injection of saline since the patient is getting every day better and will be discharged completely cured within couple of days.

Recently it is reported in the number of Practitioner that magnesium sulphate acts in the strength above mentioned as local anaesthetic and upon the same principle, it has been used for spinal injection in tetanus.

However, I do not attribute the cure in this case to the spinal injection, but to the amputation of the great toe which completely removed the focus of infection and the remaining toxin neutralized, possibly by positive phase of opsonins.

The object of reporting this case is twofold, one is that the medical men who might have tried this method of treatment in tetanus (of mag. sulph. injection) may publish the cases, and the other is, those who have not tried might try and report the result.

D G ASANA,
Acting Civil Surgeon, Panch
Mahals, Godhra

AIR INJECTION FOR SCIATICA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

Sir.—It is about four years now that a reference of treating sciatica of various types by subcutaneous injections of sterile air was made in one of the issues of the British Medical Journal.

It was about this time that I had a case of sciatica under my care, and which proved all the treatments so far mentioned futile. Various applications and injections were used for over a month with practically very little relief, and I was thinking of stretching the sciatic nerve when this new treatment appeared.

I used a sterilized respirator needle to which was attached a foot-ball syringe by means of a rubber tube. A thin pellicle of cotton inserted at the broad blunt end of the needle served as a filter for the air. The skin over the buttock was cleaned and area of extreme pain located which corresponded to the situation of the sciatic nerve. After this the needle was plunged in deep beneath the fat just on the area of intense pain and a complete量 of air was pushed in. The needle was removed and collodion painted on the puncture wound. The result was an immediate relief. The patient who was almost constantly ailing and could scarcely walk a few steps due to pain which radiated down to the heel, could now walk about and use her leg as if nothing existed. The area of injection was massaged for few days that followed.

This result however, lasted about a month when some recurrence appeared and so another longer injection was given with the result that for six months after this during which time the patient was under my observation, there was no recurrence of the trouble.

I have used this method on about 20 persons after this, and have found it a very satisfactory procedure to adopt.

MALWA DISPENSARY

Yours, etc.,
V M PHATAN, M & S

LIGATION OF CAROTID ARTERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

Sir.—I shall feel obliged if you kindly publish this case in your esteemed Gazette.

Ananta, a Hindu male, an inhabitant of Patna, aged 35, was admitted in the Mayo Hospital on the 16th April 1910 for a swelling of ten months duration in the upper part of the left side of the neck with a sinus. This swelling was supposed to be due to aneurysm of the gland.

He was put under chloroform for the operation of sinus by my colleague Assistant Surgeon Babu J N Son on the 18th.

As soon as the director was put into the sinus blood gushed out and on incision being given, the sinus was found opening into an aneurysmal sac. On the effort to stop the bleeding by local pressure having failed, I was sent for consultation. I found the patient bleeding profusely with a hemorrhagic pulse, and I decided to ligature the common carotid at the seat of election as the only chance. I made an incision and ligatured the artery and the hemorrhage stopped at once.

The wound made for the ligation was stitched.

The swelling on being explored was found to be an aneurysmal sac connected with the external carotid and reaching down to almost the bifurcation of common carotid. The sac was plugged and a few stitches were given, and the patient was sent to the ward with very little hopes. Fortunately the patient progressed well and no secondary hemorrhage occurred. The patient remained long in the ward with a small sinus about half an inch deep.

In the end I have to thank sincerely Lieutenant Colonel F P Maynard, M.S., Surgeon Superintendent of the Mayo Hospital, for his kind permission to publish this case.

AHMAD KARIM, L.M.S.,
Assistant Surgeon,
House Surgeon,
Mayo Hospital,
Calcutta

THE PLAGUE OF FLIES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Having read Captain Thurston's letter on "Formaldehyde and Flies," published in your recent issue, I am tempted to give a few more remedies, which I have read of in one of the American Magazines (May number of the *National Geographic Magazine*) a few days ago.

(1). Heat a shovel or any similar article and drop thereon 20 drops of carbolic acid. The vapour kills the flies.

(2) Dissolve one drachm of bichromate of potash in two ounces of water and add a little sugar. Put some of this solution in shallow dishes and distribute them where needed. This is a cheap and perfectly reliable fly poison which is not dangerous to human life.

(3) To quickly clear the room where there are many flies, burn pyrethrum powder in the room. This stupefies the flies when they may be swept up and burnt.

I daresay that the bichromate of potash and other remedies will be found cheaper than the Formaldehyde but which of them will be best in dealing with this pest I leave for others to try and determine.

Yours faithfully,
H B PANDIT
Sub Assistant Surgeon
Patan, N. Gujarat

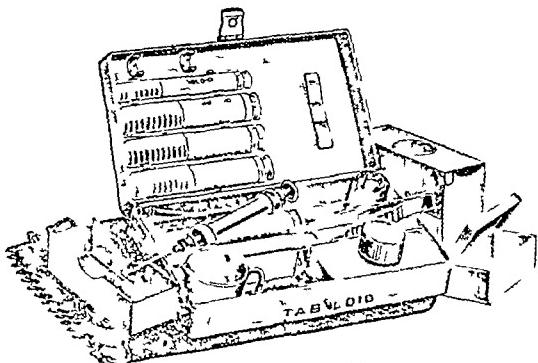
PATAN HOSPITAL

THERAPEUTIC NOTICES.

SINCE the introduction into therapeutics of the active principle of the supra renal gland now so widely used, many attempts have been made to produce a synthetic substance which should possess similar physiological properties and at the same time be free from certain disadvantages of the natural principle. Among the workers in this field have been Burroughs Wellcome & Co who now announce the issue of a synthetic product to which the name 'EPIFINE' has been given. This substance which, chemically is 3,4-dihydroxyphenylmethylinamine, was discovered at the 'Wellcome' Chemical Works, and is stated to possess all the valuable physiological properties of the supra renal principle, with some additional advantages. The most important of these latter are that it is much more stable than the supra renal principle, and, being a synthetic preparation, is more easily obtained in a state of purity. By physiological tests, 'Epinine' has been proved to produce all the characteristic effects of the supra renal principle on the blood pressure, heart's action, uterus, etc. The rise in blood pressure produced by 'Epinine' is, however, more prolonged than is the case with uses of equal height due to the supra renal principle. 'Epinine' is issued in the strength of 1 in 100 in bottles of 10 and 25 c.c. and also as a sterile solution, in the convenient 'Vapofole' containers.

'TABLOID' QUININE INJECTION POCKET CASE NO. 45

THE administration of quinine by hypodermic or intramuscular injection instead of by the mouth is a therapeutic measure which of late years has been growing in favour, and in certain conditions it has undoubted advantages over the older and more usual method. Recognising this, Messrs. Burroughs Wellcome & Co have produced an outfit which comprises



everything necessary for making such injections. The 'Tabloid' Quinine Injection Pocket Case is a very elegant, very compact, and very complete equipment. Within a nickel plated metal case so small as to be easily slipped into the pocket are contained a 20 mm. 1/2 ml. metal syringe with needles, a supply of 'Tabloid' Hypodermic Quinine Bichloride, a pair of forceps, 'Soloid' Corrosive

Sublimate for the preparation of the patient's skin, and all the apparatus, including a sterilising cap and tray, a spirit lamp and even a match box, required for the sterilisation of the syringes and the quinine solution. It will be seen that with the aid of this 'Tabloid' outfit, the practitioner can make sure, in practically any circumstances, that his injections of quinine are given under the best possible conditions as regards asepticity, and thus remove one factor, namely fear of tetanus occurring after the injection which has sometimes militated against the use of the method.

MESSRS. W. COOPER & NEPHELS inform us that they have been appointed Purveyors of "Sheep Dipping Powder" to the King.

FOR DENTAL PRACTICE

THE question of the local anaesthetic in dental work is an important one. A useful preparation for this purpose is 'Hemisine' and Cocaine Hydrochloride issued by Burroughs Wellcome & Co. 'Hemisine' is their well known preparation of the supra renal active principle, and it is here combined with cocaine. Clinical reports show that the anaesthesia produced is very satisfactory. A preparation of the same strength is 'Vapofole,' 'Hemisine' and Cocaine Hydrochloride and in this case the solution is sterile and put up in special hermetically-sealed containers, from which it can at once be drawn into the syringe and injected.

'Hemisine' and Cocaine Hydrochloride, in stoppered bottles of 10 c.c.

Each c.c. contains 'Hemisine' 0.00003 grammie (gr. 1/2160), and Cocaine Hydrochloride 0.02 grammie (gr. 1/3).

Direction—One c.c. to be injected into the gums for the production of local anaesthesia.

'Vapofole,' 'Hemisine' and Cocaine Hydrochloride 'Hemisine' 0.00003 grammie (gr. 1/2160) Cocaine Hydrochloride 0.02 grammie (gr. 1/3) water to 1 c.c.

Direction—The contents of the 'Vapofole' container (1 c.c.) to be injected.

Issued in boxes of 10.

'TABLOID' BRAND IPECACUANHA POWDER

(Keratin coated)

Of late years the employment of keratin coated ipecacuanha preparations in the treatment of dysentery has been extensively resorted to. The idea of a 'Tabloid' product encased in keratin is that the coating, being insoluble in the acid juices of the stomach, preserves the ipecacuanha intact until it meets the alkaline intestinal secretion in which the keratin dissolves and liberates the ipecacuanha. By this method the nausea and vomiting which usually follow the administration of ordinary preparations of ipecacuanha, are entirely avoided. The value of ipecacuanha in cases of amoebic dysentery has long been acknowledged, but many physicians have been deterred from employing the drug on account of the unpleasant after effects produced. With the introduction of 'Tabloid' Ipecacuanha Powder gr. 5 (keratin coated) these obstacles to a more liberal use of this valuable remedy have been completely removed, and it is anticipated that ipecacuanha now will be assigned the position in the treatment of amoebic dysentery to which its merits so justly entitle it.

'Tabloid' Brand Ipecacuanha Powder, gr. 5 (1.324 gm.), keratin coated, is issued in bottles of 100.

'SOOLID' CALCIUM CHLORIDE COMPOUND.

Each contains

Sodium Chloride	gr. 30	(1.944 grammie)
Potassium Chloride	gr. 1½	(0.097 grammie)
Calcium Chloride	gr. 1	(0.065 grammie)

The remarkable results which have been followed the employment of saline solution injections have led to their extensive adoption in many diseases and in cases of cholera especially it is clearly demonstrated that, by the use of hypertonic intravenous infusions the mortality can be reduced by nearly one half. At first a simple solution of sodium chloride was employed, but Ringer found that the addition of the calcium salt was essential to the satisfactory use of this injection. The value of Ringer's discovery was subsequently confirmed by other eminent authorities. For the convenience of physicians who favour this treatment of cholera, Messrs. Burroughs Wellcome & Co have recently introduced Soloid Calcium Chloride Compound. This preparation contains the chlorides of sodium, potassium and calcium and is the formula recommended by Major Leonard Rogers, M.S. To the busy practitioner this 'Soloid' product will prove to be a great boon as by its aid, normal saline solutions may be quickly and accurately prepared.

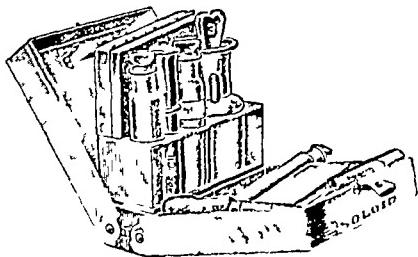
Issued in tubes of 12.

STREPTOCOCCUS VACCINE, RHEUMATIC FEVER

THE number of diseases for the treatment of which stock vaccines are obtainable increases rapidly. The latest addition to the already lengthy list of vaccines issued by Burroughs Wellcome & Co. is Streptococcus Vaccine Rheumatic Fever, 'Wellcome'. As is well known, the researches of Paine and Poynton and others have demonstrated the presence, in rheumatic lesions and in the blood of rheumatic patients, of an organism which is believed by some to be causally connected with rheumatic fever, and to which the name *micrococcus rheumaticus* has been given. It is from this organism that the new 'Wellcome' Brand Vaccine is obtained, several strains being used in its preparation. The vaccine is said to be useful in cases of persistent relapsing rheumatism. It is issued in convenient hermetically sealed phials of 1 c.c., containing either 10 or 50 million organisms.

'SOLOID' BRAND BLOOD TEST CASE NO. 506

The 'Soloid' Blood Test Case, No. 506, recently introduced by Burroughs, Wellcome & Co., will undoubtedly prove of great aid to the physician, since, in many diseases, an examination of the blood is recognised as being essential to a correct diagnosis of the complaint. Although the case measures $4 \times 3\frac{1}{2} \times 1\frac{1}{2}$ inches only the contents are so comprehensive as to include all the materials required for the speedy preparation of blood, pus and tissue films. The contents comprise one tube of 'Soloid' Brand Romanowsky



Stain (Leishman's Powder), one 20 c.c. drop bottle, 10 c.c. stoppered phials of distilled water, 10 c.c. stoppered phials of methyl alcohol, 1 c.c. pipette, grease pencil and vest pocket case containing six microscopic slides and Hagedorn needle in alcohol. Great skill and care have been exercised in designing the case, and the elegant workmanship exhibits the minute attention to details so characteristic of Burroughs Wellcome & Co. The case is made of nickel plated metal and is protected against damage by a double skin cover.

THE HOFFMANN LA ROCHE Chemical Works send us specimens of their specialties, DIGITAL and THIACOL, which are now recognised by the profession as valuable and elegant drugs.

Service Notes.

THE death of Lieutenant Colonel J. T. Leslie, C.I.E., I.M.S., Sanitary Commissioner to the Government of India, was not unexpected to those who knew the bad state of his health during the past 18 months and especially during the past few months. It was known, and he knew it too well, that his heart was much dilated, the apex beat being in the mid axillary line and this complicated by asthma and bronchitis brought him to a premature end.

Lieutenant Colonel Leslie was not 50 years of age, he having been born in December 1861. After receiving his medical education in Aberdeen and Edinburgh he entered the Bengal Medical Service with his commission, dated 1st October 1884. He served in the Burma War of 1885-6 and was for some time in Civil employ in Burma. In 1892 he came to Bengal and officiated as Chemical Examiner at the Medical College. Soon after he became Secretary to the Director General and never afterwards left Simla for any appointment and in 1904 he was appointed the first Sanitary Commissioner with the Government of India under the new scheme. In this capacity he had the opportunity of guiding and directing sanitary work in India and was especially interested in the development of research work in the various laboratories. He was pre-eminently cautious, and would not support new views till they had been tested as far as possible and touched for by experts, but he certainly encouraged research and the splendid series of some 40 volumes of *Scientific Memoirs* is a fine memorial of his regime as head of the Sanitary Department in India. Within the last few months he was keenly

interested in getting the Sanitary Department brought under the newly formed Department of Education, and if some of the *lalas* which flow so easily into the Education Department are to be diverted towards making the people healthy, the change will have been a good one.

It is, however, notorious that a reorganisation of the relative shores of work between the Sanitary Commissioner with the Government of India and the Director General, I.M.S., is imperative and doubtless opportunity will be taken of the vacancy which has so prematurely occurred to readjust matters more in consonance with the position of the Director General as the head of the Indian Medical Service and of the profession in India.

DR DAVID PICACHY died at Purnea on 16th January 1911, aged 81. He was probably the oldest medical practitioner in India with European qualifications. He was born at Purnea in January 1830, and educated at the Calcutta Medical College where he took the diploma of I.M.S. in 1848. On 10th August of that year he was appointed a Sub Assistant Surgeon and posted to the charge of the (then) new dispensary at Muzraipur. Shortly afterwards he was transferred to Purnea, as Sub Assistant Surgeon in charge of the dispensary at that station, and spent several years there. He resigned the service and went to Europe in 1851-55, and after studying at King's College London took the M.R.C.S. in 1855. Returning to India, he started practice at Purnea, getting the appointment of Planters Surgeon, and in the latter part of 1865 was appointed to the uncovenanted Medical Service as Civil Medical Officer of Purnea. When he attained the age of sixty, in January 1890, he was granted a special extension of some eight months more, to enable him to complete twenty five years' service for full pension, and for the last few months of his service was transferred to Bogia. Retiring in September 1875, he settled at Purnea, where he spent the remaining twenty years of his life. During his tenure of the Civil Surgeoncy of Purnea over twenty four years he only took leave once in 1876, when he went to Europe for three months, the late Lieutenant Colonel D. W. D. Comins, afterwards Inspector General of Jails, acting for him.

MAJOR CHARLES THOMSON, of the Bengal Medical Service, retired on completing seventeen years' service, on 30th January 1911. He was born on 5th April 1870, educated at Edinburgh University, where he took the degrees of M.B., C.M., in 1892, and entered the I.M.S. as Surgeon Lieutenant on 29th January 1894, becoming Surgeon Captain on 29th January 1897, and Major on 2nd January 1906. His service had been spent in Military employment, but the Army List assigns him no war service. For the last eight months he had been on leave.

SURGEON MAJOR RICHARD EDWARD WRAFTER, I.M.D., retired, died at Dehra Dun on 23rd January 1911, aged 77. He entered the Bengal Subordinate Medical Department as a Hospital Apprentice in 1848 and was at once sent on active service, going through the Panjab campaign of 1848-9, when he was present at the action of Ramnagar, the passage of the Chenab River, and the battles of Sidiullahpur, Chilawal, and Gujrat. At the outbreak of the mutiny he was stationed at Meerut, and accompanied the force from Meerut to Delhi, being present at the two actions on the Hindun River, on 30th and 31st May 1857, and at Badli ka Siri on 8th June. He served through the whole of the siege of Delhi and at the capture of the city in the action at Nujifgarh on 25th August, and through the sieges and capture of Lucknow. Subsequently he served in Rohilkhand, and took part in the attack on Fort Runia, the action at Aliganj, the capture of Bareilly, and the pursuit of the rebels at Shahjahanpur and Nidhamali. In 1861 he was posted to Civil employment in the Panjab, and retired, after forty years' service, in 1888.

CAPTAIN L. B. SCOTT, I.M.S., on return from leave, is posted to Sylhet as Civil Surgeon.

DOCTOR R. S. ASHE is appointed Civil Surgeon of Rangoon.

LIEUTENANT I. H. BONAR is appointed Civil Surgeon of Gao Hills.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieutenant Colonel B. B. Grayfoot, M.D., I.M.S., to hold charge of the office of Deputy Sanitary Commissioner for the Sind Registration District in addition to his own duties during the absence on deputation of Captain W. O'S. Murphy, M.B., B.C.H., D.P.H., I.M.S., or pending further orders.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieutenant Colonel H C L Arnim, D P H., I M S., to act as Sanitary Commissioner for the Government of Bombay, in addition to his own duties during the absence on deputation of Lieutenant Colonel T E Dyson, M B., C M., D P H., I M S., or pending further orders.

MAJOR H F KNOTTON, I V S., is granted privilege leave of absence for 35 days from the date of relief.

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieutenant Colonel J G Hoyle, M R., B CH., I M S., to act as Physician, St George's Hospital, Bombay, in addition to his own duties, during the absence on leave of Lieutenant Colonel M A T Collier, M B. (Aberd.), C M., I V S., or pending further orders.

LATA HORA CHAND, Civil Surgeon, Jhelum, was granted 3 months' privilege leave from 25th February.

THE result of the January examination was announced on January 28th. There were 26 candidates, of whom 20 qualified, the first 14 being admitted as Lieutenants on Probation, with effect from January 28th, 1911. The names of the successful candidates with the marks obtained by each out of a possible total of 5,100 are given below, together with their degrees and medical school.

Name	Degrees, etc	Medical School	Marks
J Scott	M B., Ch B., Edin D P H., D T M and H	Edinburgh University	3,691
A R S Alexander	M B., B S., Lond	University College Hospital	3,502
F W Hay	M B., Ch B., Edin	Edinburgh University	3,362
Inderjit Singh	M B., B C., Cantab	Cambridge University and King's College Hospital	3,357
S M Hepworth	M B., Ch B., Leeds	Leeds University	3,234
H S Cormack	M B., Ch B., Edin M R C S., L R C P	Edinburgh University	3,240
G Tate	L M S S A	King's College Hospital and Edinburgh University	3,203
G S Block	M B., Ch B., Edin	St Andrew's University and Edinburgh University	3,203
E S Goss	M R C S., L R C P	Middlesex Hospital	3,118
J F H Morgan	M R C S., L R C P	Bristol University	3,111
K G Pandalai	M B M S Madias, M R C S., L R C P	Madias Medical College and Middlesex Hospital	3,105
J L Sen	M B., Calcutta	Calcutta Medical College and Middlesex Hospital	3,035
C A Wood	M B., B S., Lond., M R C S., L R C P	Guy's Hospital	3,012
P S Connellan	M R C S., L R C P	Bristol University	2,914

LIEUTENANT COLONEL W R CLARKE, I V S., goes to Lahore College as Civil Surgeon and Professor of Forensic Medicine, vice Lieutenant Colonel Hendley about to be promoted.

LIEUTENANT COLONEL A COLEMAN, I V S., made over charge of the duties of the Superintendent, Multan District Jail, to Captain W W Jeudwine, I M S., on the afternoon of the 13th March 1911.

THE services of Lieutenant Colonel H Hendley, I V S., Civil Surgeon, Lahore, Professor of Forensic Medicine and

Toxicology, Medicinal College, and Medical Officer of the Government College Lahore are replaced at the disposal of the Government of India, Home Department, with effect from the afternoon of the 7th March 1911.

On transfer from Ferozepore Captain A F Babonau I M S., assumed charge of the office of District Plague Medical Officer, Ambala, on the forenoon of the 28th February 1911.

CAPTAIN J G G SWAN, I M S., Officiating Civil Surgeon, has been permitted by His Majesty's Secretary of State for India to convert the period from 1st to 31st July 1910 and from 1st October 1910 to 15th January 1911 of the furlough, granted to him in Punjab Government Notification No 842, dated the 1st November 1909, into study leave.

We understand that the new Medical College at Lucknow will be opened to students in October next. It is said that Major W Selby D SO, F R C S., and Viceoy's Honorary Surgeon will be Principal, Major W S Willmore, V R C I I M S., will be Professor of Medicine, Major H J Walton M B., F R C S., I M S., will be Professor of Pathology, and Captain H R Nutt, I M S., M D., F P C S., will be Professor of Surgery.

THE services of Lieutenant Colonel C H Bedford, M D., I M S. (Bengal), are replaced at the disposal of the Home Department, with effect from the 18th April 1911.

LIEUTENANT COLONEL BEDFORD will go home on long leave pending probable retirement. He has for several years past been in charge of the Excise Laboratory at Kasauli and has made for himself a high reputation as an Excise Expert. Before this special appointment he was Chemical Examiner, Calcutta.

MAJOR E D W GREGG, M B., I M S., Assistant Director, Central Research Institute, Kasauli, is granted privilege leave for 3 months with furlough for 5 months in continuation with effect from the 1st April 1911.

CAPTAIN J M A MACMILLAN, M B., F P C S., I M S., Civil Surgeon, Hoshangabad, is deputed on special duty at Pachmarhi for the period from the 1st April to the 7th July 1911.

SECOND GRADE CIVIL ASSISTANT SURGEON BIPIN BIHARI GUPTA, attached to the Bowie Hospital, Hoshangabad, is appointed to officiate as Civil Surgeon, Hoshangabad, during the absence on deputation of Captain J M A Macmillan, M B., F P C S., I M S., or until further orders.

BABU THAKUR RAM DHORI SINHA, of Motihari, has been elected Vice Chairman of the local municipality. He is a medical practitioner. This is a welcome change from the rule of the *Valeel*.

CAPTAIN C G SELMOUI, I M S., is appointed from 14th February as specialist in the Prevention of Disease and in charge of the Biograde Laboratory at Delhi Dun.

LIEUTENANT COLONEL W R EDWARDS C M C., I M S., is appointed to be Administrative Medical Officer, new Frontier Province vice Lieutenant Colonel Duke, I M S., who has gone in a similar capacity to Quetta, and succeeds Lieutenant Colonel W Sykes I M S., who has taken 19 months' furlough preparatory to retirement.

MAJOR H BENNETT, M B., I V S., acted as Deputy Sanitary Commissioner, Southern Registration District, Bombay, from the 4th to the 22nd February 1910, both days inclusive.

MAJOR A F STEVENS, I M S., Civil Surgeon of Muishibad, at present officiating as Civil Surgeon of Hazaribagh, is confirmed in the latter appointment with effect from the 14th January 1911, vice Major B H. Deare, I M S., transferred.

MAJOR R H MADDOX, I M S., Civil Surgeon, second class, now on leave, is appointed to be Civil Surgeon of Gaya, with effect from the 14th January 1911. Captain F P Connor, I M S., continuing to officiate in that appointment as at present.

MAJOR B H DEARE, I M S, Civil Surgeon, Darjeeling, is appointed to officiate as a Civil Surgeon of the first class, with effect from the 14th January 1911 during the absence, on leave, of Lieutenant Colonel D G Crawford, I M S, or until further orders.

MAJOR A T GAGE, I M S, Superintendent, Royal Botanic Garden, Calcutta, of the Lloyd Botanic Garden, Darjeeling, and of the Cinchona Cultivation, Bengal, is allowed privilege of leave for two months and sixteen days, under article 260 of the Civil Service Regulations, with effect from the 18th April 1911, or any subsequent date on which he may avail himself of it.

MAJOR B R CHATTERTON, I M S, Civil Surgeon of Muzaffarpur, is allowed privilege leave combined with furlough for seven months and nine days, i.e., privilege leave for two months and seven days under article 260 of the Civil Service Regulations, and furlough for the remaining period under article 308 (b) of the Regulations, with effect from the 27th March 1911, or any subsequent date on which he may be relieved of his duties.

MR A A PRICE, Personal Assistant to the Inspector General of Civil Hospitals, Bengal is allowed combined leave for nine months, i.e., privilege leave for three months under article 260 of the Civil Service Regulations and leave on medical certificate for the remaining period under article 336 of the Regulations, with effect from the 29th March 1911, or any subsequent date on which he may be relieved of his duties.

LIEUTENANT COLONEL JOHN CRIMMIN, V C, C I E, I M S, has been given the Volunteer Officer's Decoration.

CAPTAIN R B S SWFELL, I M S, Officiating Surgeon Naturalist, Marine Survey of India is confirmed in that appointment, with effect from the 4th January 1911.

CAPTAIN C F MARR, M B, Indian Medical Service, Medical Officer, 90th Punjabis, to officiate as Medical Store keeper to Government, Bombay, vice Major F E Swinton, Indian Medical Service, granted combined leave for eight months, with effect from the 1st April 1911.

MAJOR J A BLACK, M B, I M S is confirmed in the appointment of Chemical Examiner, Punjab and Professor of Chemistry in the Medical College, Lahore, with effect from the 11th March 1911.

MAJOR F N WINDSOR, M B, I M S, is confirmed in the appointment of Chemical Examiner, Bengal and Professor of Chemistry in the Medical College, Calcutta, with effect from the 14th March 1911.

The service of Captain J Kirkwood, M B, I R C S F, I M S is placed temporarily at the disposal of the Government of Madras.

LIEUTENANT COLONEL DONALD ST JOHN DUNDAS CRANT, M B, is promoted to be Colonel I M S, vice Colonel J A Cunningham M D, deceased, with effect from the 1st January 1911.

COLONEL GRANT'S tenure of appointment will reckon from 14th March 1911.

In supersession of Bombay Government Notification No 6269, dated 14th December 1910, Captain T C Lucas, R A M C, Surgeon to His Excellency, is granted privilege leave for ninety days in combination with leave on private affairs up to the 9th June 1911.

LIEUTENANT COLONEL J K CLOST, I M S, Civil Surgeon, has been granted by His Majesty's Secretary of State for India, extension of seven days' furlough.

MAJOR C A LANE, I M S, Civil Surgeon, second class, now on leave is appointed to be Civil Surgeon of Murshidabad, with effect from the 14th January 1911, vice Major A F Stevens, I M S. Major J G P Murray, I M S, continuing to officiate in that appointment as at present.

CAPTAIN W G HAMILTON, I M S, made over charge of the Midnapore Central Jail to Captain F H Salisbury, I M S on the afternoon of the 22nd March 1911. Captain Hamilton took over charge of the Presidency Jail, Calcutta on 29th March, vice Major G I Hunter, I M S, gone on long leave.

On his return from leave Senior Military Assistant Surgeon and Honorary Lieutenant A E Hamlin is appointed to officiate as Civil Surgeon, Hanthawaddy, in place of Mr. R A Hollingsworth, L R C I & S (Edin), transferred.

On relief by Senior Military Assistant Surgeon and Honorary Lieutenant A E Hamlin, Mr. R A Hollingsworth, L R C I & S (Edin), is appointed to be Civil Surgeon, Chin Hills, Falun, in place of Senior Military Assistant Surgeon and Honorary Captain J F Goldsmith, proceeding on leave.

No more appointments are to be made to the Ass'ty Department of the Mint from the ranks of the Indian Medical Service.

The Financial Department will have to go further and very probably fare worse.

CAPTAIN H M INMAN, I M S, has been appointed to act as Civil Surgeon, Jacobabad, from the 2nd January 1911, in addition to his own duties.

The following I M S officers have passed the Examination for M R C P, London, viz Major E E Waters, Captain Hay Burgess, Major David McCrae.

CAPTAIN S J PATRICK, I M S has joined the Jain Department, Bombay.

CAPTAIN A S SIMSON, I M S has succeeded Captain L Reynolds, I M S as medical officer Lawrence Military Asylum, Sanawar.

MAJOR LEONARD ROEIS F C I, I M S has gone on nine months' furlough from 8th March and Captain Megaw acts as Professor of Pathology. Captain Denham White joins the Presidency General Hospital and also Captain H Steen, while Captain B Foster has gone on leave.

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis if requested.

Communications on Editorial Matters, Articles Letters, and Books for Review should be addressed to THE EDITORS *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions Advertisements and Reprints should be addressed to THE PUBLISHERS Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "The Indian Medical Gazette" Rs 12 including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c., RECEIVED —

Records, Indian Museum Vol IV No 1
Administration Report 1891 P 1890-10
Mansell Moullin's Enlargement of the Prostate Price, 1/- (H K Lewis)

Oertel's Bright's Disease 2nd Ed (W B Saunders & Co)
Vaginal Catarrh By S W Bandler 2nd Ed W B Saunders & Co
Muskur's Handbook of Practical Treatment, Vol 1 Price, 7/- per set (W B Saunders & Co)

Sahli's Diagnostic Methods (New Ed) 2nd Ed (W B Saunders & Co)
I Rogers' Cholera and its Treatment 10/- Ed (Oxford Medical Publications)

Transactions Soc Tropical Medicine Feb 1910
Mansell Moullin's Prostate 6/- (H K Lewis)
Proceedings Royal Soc of Medicine, Feb 1911 (Longman, Green & Co)

Capt Knowl's Military Hygiene (Ballière Tindall & Cox)
Sanitary Handbook for India (McNally's) (10th Ed. I edited by Major Cornwall) 1 M S Madras Govt Press)

Jones & Liston's Anopheline Mosquitoes (New Ed) (Thacker, Spink & Co)

Meltine Point Determinations G A Mengé (Washington Government Printing Office)

Burmese Wolf Caught R St John (F Marlborough & Co)

Kocher's Text Book of Operative Surgery (F Black & Co)

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM —

Capt Green Armitage, I M S Upper Burma Capt F C Taylor I M S Capt McCarlison, I M S Gilgit, Lt Col H Smith, I M S Amrit Capt Hugh Stott I M S Seunderabad, Dr I Fink Burma Capt I Walker, I M S Major R H Elliot I M S Capt C A Gill I M S Lt Col Castor, I M S Rangoon Major C C Barrie I M S Rangoon Lt Col Nehru I M S Lansdowne Dr A C Butt Aast Surin Surinwadi Murshidabad Major Fouquier I M S, Waltair Major J W Cornwall, I M S Coonoor Dr Bayley de Castro Calcutta Major Clinton Lane, I M S London Capt Kentes, I M S London Lieut Keyworth I M S Lt Coullie, I M S Capt F C Iraser, I M S, Asst Surgeon I M S Kasauli

Original Articles

NOTES ON AN EPIDEMIC OF PYREXIA OF UNCERTAIN ORIGIN

BY G E STEWART,

MAJOR, I M S

AN epidemic of an acute fever, presenting many points of resemblance to that described by Lt-Col Wimberley, in the *I M G* of August 1910, occurred in the 127th Baluchis in Poona in the autumn of 1910.

The regiment returned from field service in Somaliland in June 1910 and occupied the centre set of three Native Infantry lines, all similar in situation and construction and separated from each other only by a road and a space of about 50 yards. The other two sets of lines were occupied by the 114th Mahrattas and 80th Carnatic Infantry, both of which remained entirely unaffected by the epidemic.

The lines were old and badly constructed, leaked freely during the rains and swarmed with fleas, bugs and other vermin.

While in Somaliland the regiment suffered considerably from climate and bad water, and consequently was not in a good state of health on its return. About half the regiment went on furlough in June, returning mostly between the 21st and 27th October.

All men returning from furlough were segregated in tents about 150 yards outside the lines and received a daily dose of quinine, gis x, for a period of ten days. They did the usual parades with the other men.

The epidemic commenced during the last few days of September, and was most severe in October and November. At the end of November the regiment was moved into camp for three weeks for Brigade Training, and the epidemic as such ceased immediately, though a few cases occurred subsequently as shown in the accompanying table.

The disease in September and October was confined almost entirely to the right wing of the regiment, consisting of Pathan companies. The Punjabi and Baluch companies of the left wing remained practically unaffected until late in October, after which cases occurred amongst them, but as shown in the table they were at no time so severely implicated. There was nothing apparent in the housing, water-supply or general conditions to explain this difference.

The few women and children in the lines did not suffer appreciably from the epidemic, possibly owing to the partial isolation from infected persons afforded by their separate huts.

In addition to the admitted cases many men are said to have had fever in the lines, but were able to do duty and did not report sick.

Table showing Admissions for Pyrexia of Uncertain Origin

	Right Wing	Left Wing	Total	Average Strength of Regiment	Percentage of Admission
September (25th-30th)	8	—	8	422	1.9
October	47	11	58	545	10.6
November	83	38	121	870	13.9
December	9	7	16	860	1.9
January, (1911)	10	2	12	800	1.5
February	2	1	3	736	0.4
March	4	—	4	610	0.6
TOTAL	163	59	222		

Age had no apparent effect on the incidence of the disease.

The officers and their families were quite unaffected.

Two men probably acquired the disease in hospital, one a ward orderly and the other a patient admitted for other causes.

It is probable that many of the cases admitted as "Pyrexia of uncertain origin" and particularly those lasting only one or two days may have been of a different nature from the typical fever causing the epidemic. Some may have been malarial, although the blood examinations were negative, and others due to causes such as chills, gastro-intestinal disturbances, etc., which commonly produce transient pyrexias.

However, as there was nothing to differentiate these cases they were all classed as "Pyrexia of uncertain origin," and for this reason, I believe, a larger proportion of cases are classified as lasting under four days than would have occurred if these casual pyrexias could have been separated from the specific fever causing the epidemic.

Malaria was not prevalent in the regiment at the time, 19 cases occurred between September 1st and March 31st.

It is noticeable that, occupying the same lines, in the autumn of the previous year 39 cases had been admitted in the 127th Baluchis for "Influenza" and 1 for "Pyrexia," and that as in this year the incidence was chiefly in the Pathan companies, 27 cases as against 13 in the other wing.

The clinical features were as follows —

The incubation period was doubtful, among men returning from furlough the earliest typical case occurred on the 8th day after arrival in Poona. Two other cases of slight pyrexia for one day only occurred on the 3rd and 6th day after arrival, but these may have been due to other causes.

The onset was sudden and usually accompanied by chilliness or rigors. No preliminary pains before the fever is said to occur sometimes in dengue.

The symptoms were very variable in degree, some cases had nothing but slight malaise and

others were completely prostrated and racked with pains

Headache was usual, not invariable, general, frontal and sometimes very severe

Pains in the lumbar region and down the back of the legs were generally complained of and were often severe

No swelling or pains in joints

Tongue usually furred and white but not thickly so. The "strawberry" tongue was not noted

Vomiting occurred at onset of pyrexia in a few cases

Bowels usually constipated

Catarrh of respiratory tract in only a small proportion of cases, and I think not more than was prevalent at the time among the rest of the regiment

Epistaxis occurred in four cases only, and at the beginning of the disease

The pulse was usually full and rapid in the early stages, but during the terminal rise and first few days of convalescence it was often markedly slow, in many cases less than 60 per minute

Injection of the conjunctivæ and photophobia was not uncommon, particularly in cases where the headache and other pains were severe

Spleen and liver were not enlarged perceptibly

No rash or desquamation in any case

Rigors only occurred at onset

Sweating on defervescence was not marked

No delirium, cardiac or nervous affections, except prostration which was often marked

No complications occurred

Blood examinations were made in each case and were negative

Character of the Fever —

The duration of pyrexia varied considerably and was not always easy to calculate, as often the men did not report sick immediately and were hazy in their statements as to how long they had been ill. The following is approximately correct

Under 2 days in	13 Cases or	6 per cent
2—4 days	" 105	" 48 "
5—7 "	" 93	" 44 "
8 "	" 3	" 16 "
9 "	" 1	" 05 "

In the most common type the temperature usually ran up to 102° or over at the onset, gradually sank with morning remissions for the next few days, and then either dropped to normal (Charts No I and II) or showed a terminal rise, lasting one or two days and giving a "saddle-back" (Charts No III, IV and V). This terminal rise occurred in 103 out of 218 charts, or nearly 50%, and was usually lower but sometimes higher than the initial rise.

Occasionally there was a period of apyrexia before the terminal rise, this lasted 1 day in 16 cases and 2 days in 10 cases out of 218 (Charts Nos. VI and VII).

Defervescence was usually sudden, by crisis in about 70% of cases

The initial fever was under 103° in 66% of cases, between 103 and 104° in 24% and over 104° in 10%

Relapses and second attacks — Two cases had slight rises of temperature, 5 and 6 days respectively, subsequent to the termination of the primary fever

Three cases had more than one attack, one after an interval of 18 days (Chart No IX) and one after 79 days (Chart No X). The third case (Chart No XI) would appear to have had an abortive attack when first admitted, a mild attack after an interval of 12 days of apyrexia and then atypical attacks after another 19 days. He was an anaemic, debilitated man, and remained in hospital under observation during the whole time. It is noticeable that in these three cases the subsequent attacks were in each case more severe than the first, indicating an absence of protection.

Mortality — Nil

Convalescence — There was marked prostration and weakness after defervescence. Recovery was slow but complete. No sequelæ were noted.

Treatment — Quinine by the mouth and hypodermically, arsenic, salicylates, salol, creosote and carbolic acid were tried without effect on the temperature.

Nature of the Fever — As regards clinical features and seasonal incidence the epidemic resembles closely that described by Lt.-Col. Wimberley, M.S.

I am disinclined to think that it could be "Phlebotomus Fever" or any other disease carried by flying insects for the following reasons — (1) the two regiments lying on each side of the 127th Baluchis and separated only by a narrow space from it remained entirely unaffected, (2) the incidence was much greater on one wing of the regiment than the other, although living close together and under similar conditions, (3) the women and children in their separate huts in the lines remained free, (4) sand-flies were not prevalent at the time, (5) the duration of pyrexia in a large proportion of the cases was longer than is usually described in sand-fly fever.

The facts that men returning from furlough were practically free during their period of segregation in tents and that the epidemic ceased as soon as the regiment was moved into camp would indicate that the infection was acquired in the lines, possibly by the agency of fleas, bugs or other vermin with which they were infested.

The absence of a rash, flushing or desquamation of the skin, of involvement of the joints and the lesser degree of pains in most cases would negative dengue fever.

The catarrhal, gastric or nervous symptoms of Influenza were absent in nearly all cases.

NOTES ON AN EPIDEMIC OF PYREXIA OF UNCERTAIN ORIGIN

BY G. E. STEWART,

MAJOR, I.M.S.

CHART I

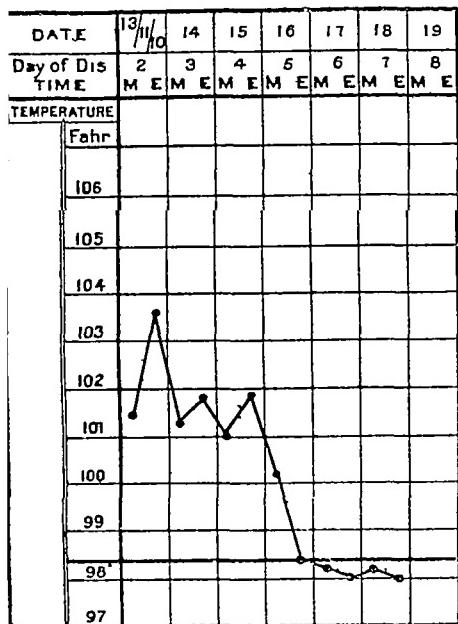


CHART II

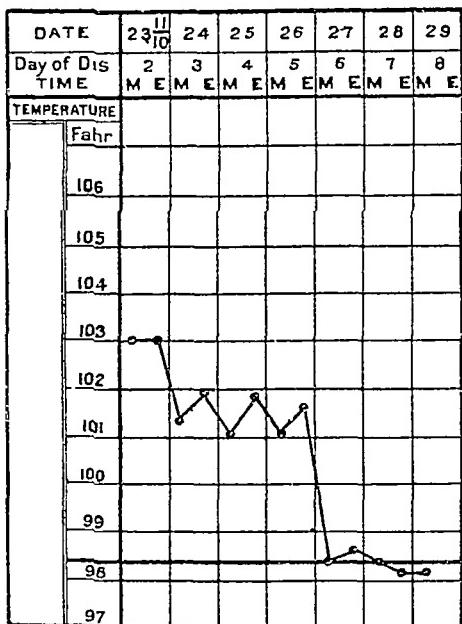


CHART III

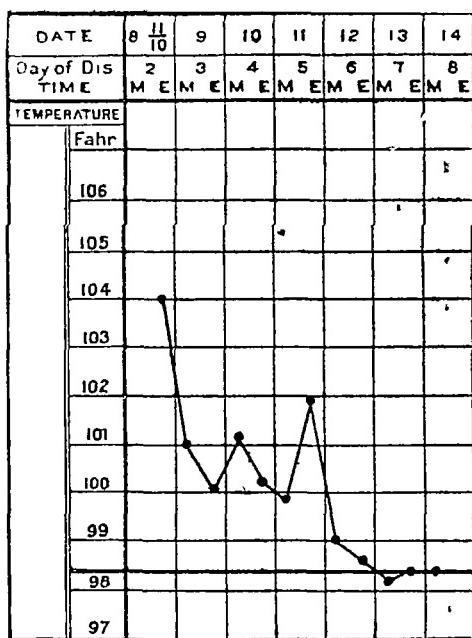


CHART IV

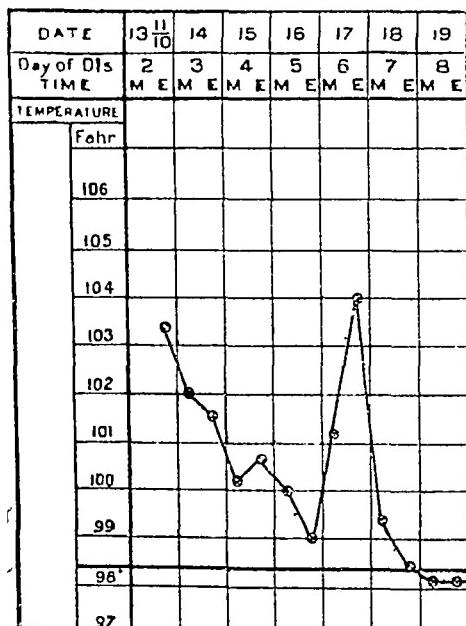


CHART V

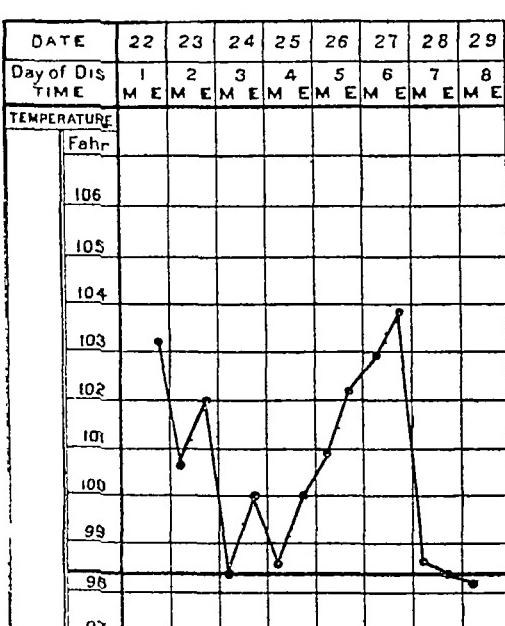
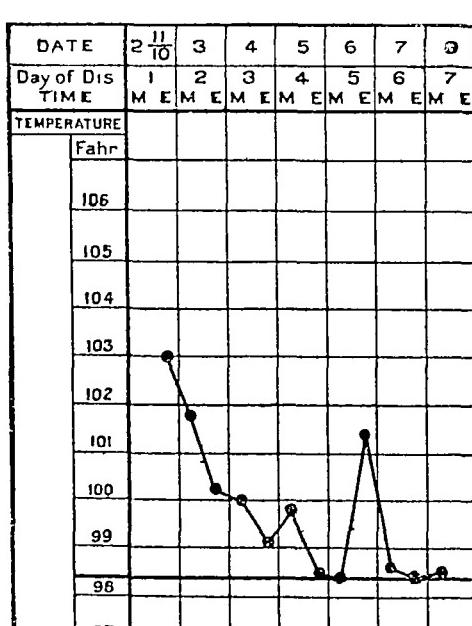


CHART VI



NOTES ON AN EPIDEMIC OF PYREXIA OF UNCERTAIN ORIGIN

BY G. E. STEWART,

MAJOR, I.M.S.

CHART VII

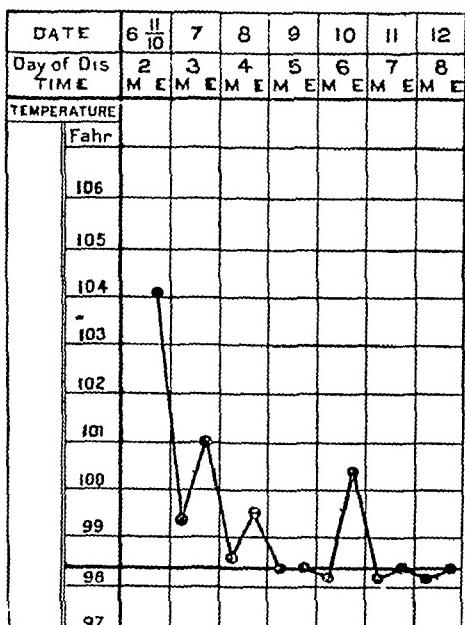


CHART VIII

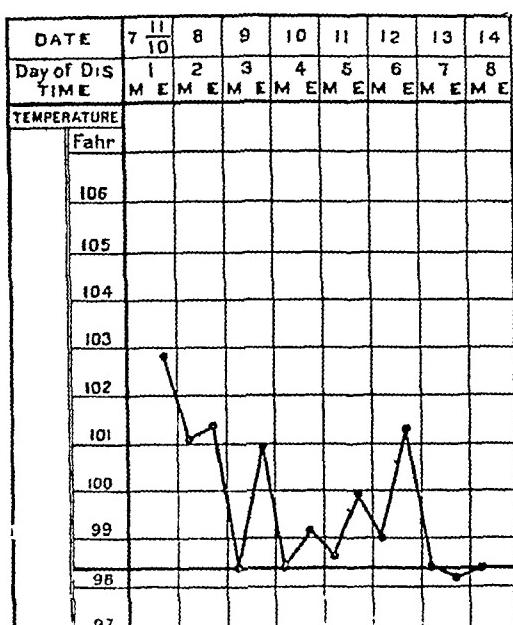
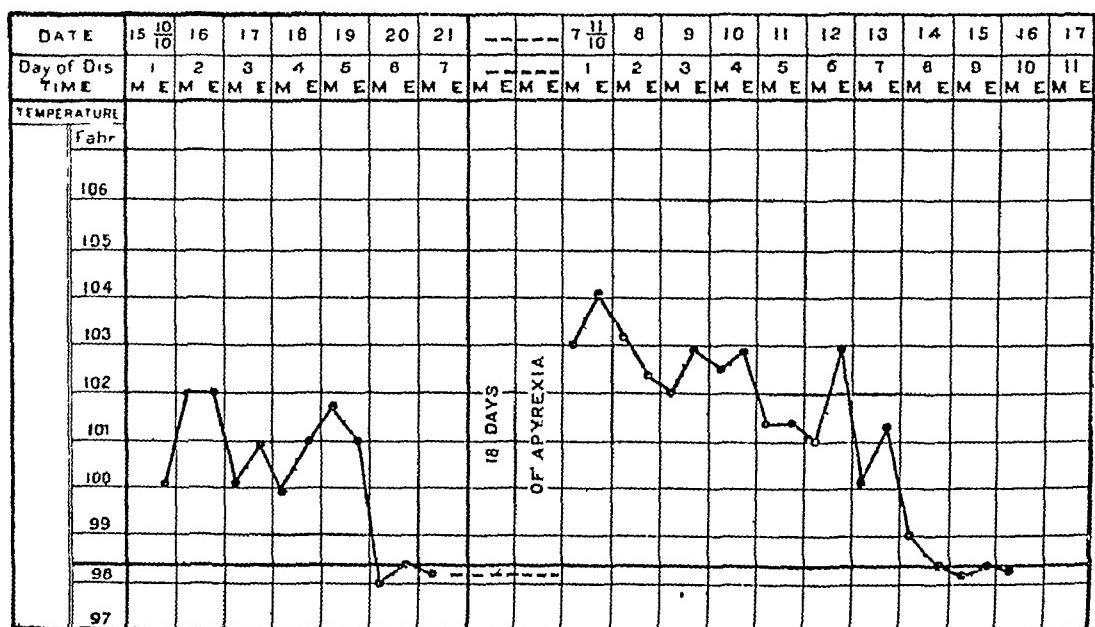


CHART IX



NOTES ON AN EPIDEMIC OF PYREXIA OF UNCERTAIN ORIGIN

BY G E STEWART,
MAJOR, I.M.S

CHART X

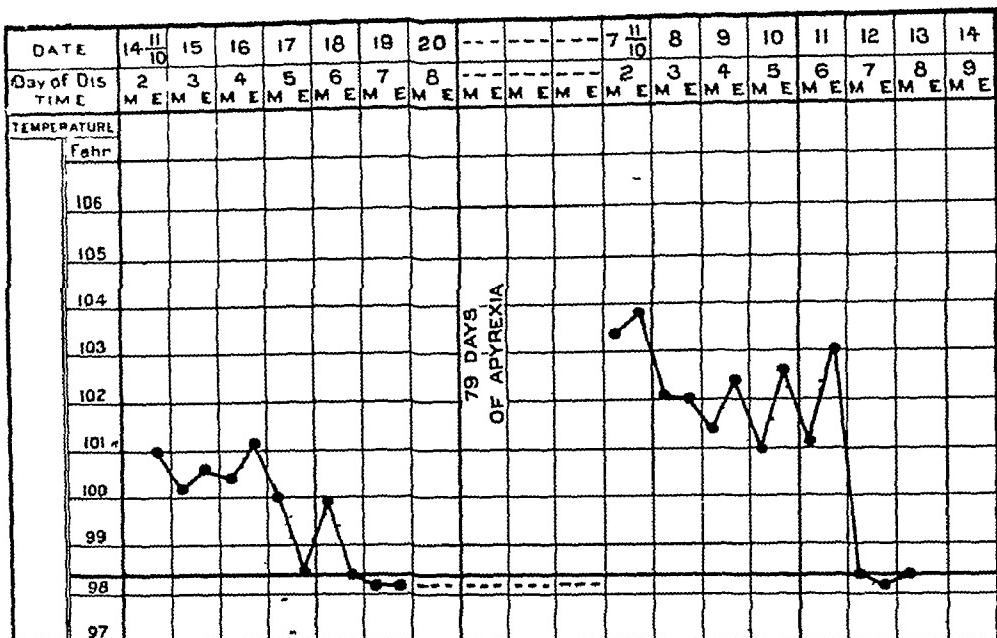
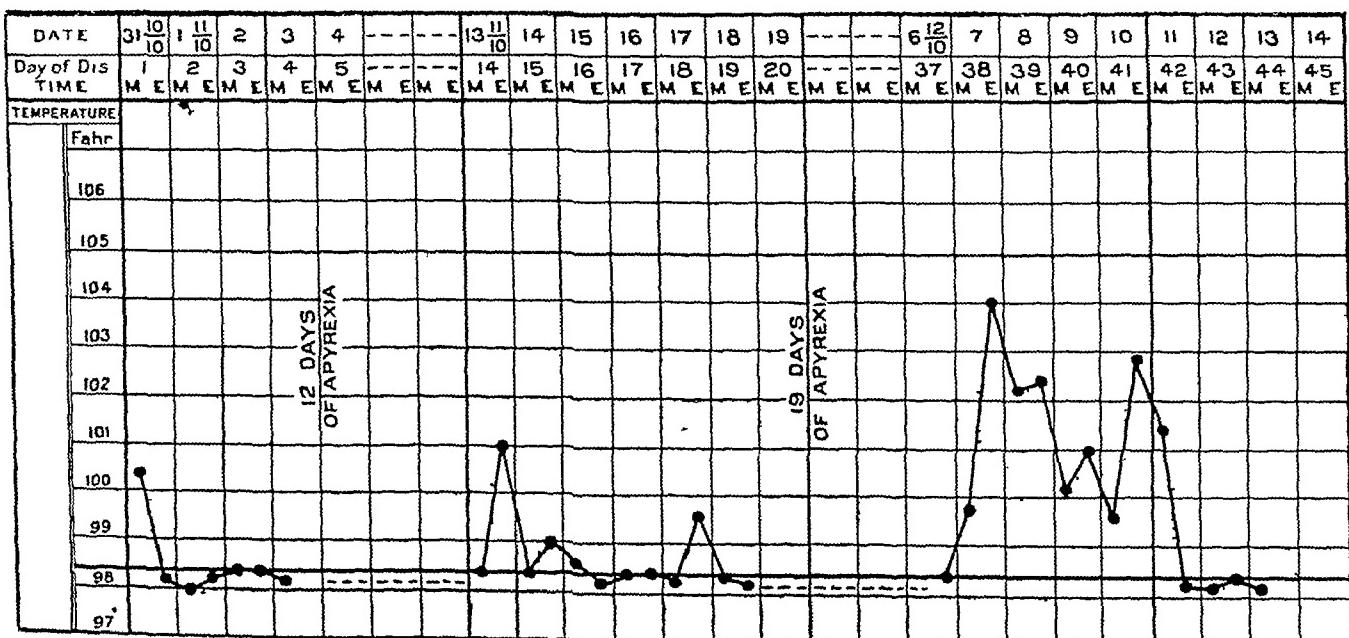


CHART XI



In many points the disease resembles seven-day fever, but a large proportion of cases did not last so long, there was no mottled rash and the strawberry tongue was not noted. There may be minor points of difference, but if so, the name is misleading.

Epidemics of a fever of very similar nature have been reported recently from several parts of India, and it is only by comparing them that we are likely to arrive at any conclusion as regards their identity, it is for this reason that I submit these notes.

NIGHT SOIL CONSERVANCY IN CANTONMENTS

By P. HEHIR, FRCS, ED,
LIEUT COL, I.M.S.

THE question of night-soil conservancy and the best method of getting rid of excreta as speedily as possible is one of the most serious problems in the practical sanitation of large cantonments and standing camps on field service. In billets in villages and when the force is small and deep trenching is adopted, the question is associated with fewer difficulties, but in the case of large cantonments and in standing camps on field service, the subject is literally one of vital significance.

The greatest danger from excreta is the fact that with large masses of troops some are almost certainly suffering from one or more forms of infectious diseases communicable through excreta. In the case of ordinary excreta not specifically infective, it is not until the ordure begins to decompose that it is injurious. The period when this decomposition sets in varies with the season of the year, and particularly depends upon whether the liquid and solid excreta have been mixed, when mixed, putrefaction rapidly ensues, and carburetted hydrogen gases are given off, especially in the hot weather. All excreta should, therefore, be removed from the neighbourhood of barracks or incinerated as expeditiously as possible, and before this putrefaction sets in.

It is not necessary here to go over the evidence which connects various diseases with a defective conservancy system beyond stating that, apart from ascariasis and ankylostomiasis, the chief specific diseases arising from neglected and inefficiently worked conservancy are—enteric fever, bacillary or epidemic dysentery, infective diarrhoea and cholera.

Various systems of dealing with the night-soil of cantonments are in existence—the pail system, dry-earth system, and incineration in combination with the pail system.

Pail System—The pail system in one or other of its various forms is in general use in Indian cantonments. It implies really the use of a movable cesspool, consisting of a pail or pan

The pail is used alone in the latrines of Native troops, and in the case of European troops some liquid disinfectant is usually kept in the pail. As a rule, the pails are emptied periodically during the day.

A brief description of what is done in large cantonments will enable us to understand the working of the pail system. There is a conservancy establishment consisting of scavengers and bullock-drivers, there are also a certain number of water-tight iron night-soil carts to convey the night-soil away from the latrines. Each cart has the latrines of a certain area allotted to it, with its driver and scavengers. These men are responsible for carrying out their work in that area.

The latrines are placed in relation to definite barracks in various parts of the cantonment, and consist of either galvanised or corrugated iron, or masonry or brick-sheds, with compartments. Each compartment has a recess into which an iron pan or bucket fits. The pans are emptied several times during the day into intermediate receptacles, these are elongated iron, cylindrical-shaped utensils, usually having a capacity of 4 to 6 gallons, provided with watertight iron covers. A sufficient number of these are attached to each privy to contain the contents of the pails, so that the pans are kept more or less free from accumulated ordure. The contents of the intermediate receptacles are emptied into the night-soil carts in most instances. The night-soil is then conveyed to and deposited in trenches (superficial or deep), or on prepared soil situated reasonably remotely from all barracks, bazaars, wells, tanks and sources of water-supply.

The pans, receptacles, carts and latrines are regularly tarred, and lately in many cantonments, a quantity of liquid disinfectants has been used to prevent smell, to kill or delay the multiplication of disease germs, and to prevent the breeding of flies. The plan above sketched, more or less modified, is that which is adopted in most cantonments in India, and it is an exceedingly laborious and expensive one.

In some places carts are not used. Then the intermediate receptacle which is filled from the pails or pans used in the latrines is carried on the head of one man, or when of large size, suspended on a pole between two men, or when of small size, two are suspended from the ends of a pole and carried on the shoulder of one man, in this latter case the pails actually used in the latrines are carried in this way, an intermediate receptacle then not being necessary. Water-tight covers are provided. The contents of the receptacles or pails are discharged direct into the night-soil trenches.

When removal has to be carried out, removal of the pails actually used in the latrines is by far the best way of doing this, one man carrying two pails at the ends of a bamboo slung across the shoulder. In this case the size of the pails

should be uniform and something less than a cubic foot in capacity, and they should be provided with properly fitting covers, which should be always accurately adjusted before removal.

In connection with latrines for Native troops and Native inhabitants of cantonments, if trenching of night-soil is adopted, it is preferable to remove the solids and liquids separately, and arrangements are now usually made in the latrine pans in the latrines to keep them so, for if the trenching ground is any distance, the jolting of the carts causes mixed excreta to assume a viscid glutinous form, which makes it difficult to clean the carts.

To work such a system of removal as this in its perfected form requires a good conservancy staff, and a sufficient number of carts, receptacles, pails, and latrines. One latrine of 12 seats is sufficient for about 250 men, or one of five or six seats per company.

Diy-earth System—This is a plan in which diy-earth is used as a deodorant and disinfectant in the privy pans each time the privy is used. About 3 pounds of earth are used on each occasion. This method was in use in Indian cantonments in European troops' barracks for many years. During the last five or six years it has fallen into disfavour, and there is abundant evidence to show that it was in all probability a potent cause of endemic enteric fever, and probably also of bacillary dysentery. The germs of specific diseases, such as enteric fever, bacillary (and possibly also amoebic), dysentery, infective diarrhoea and cholera, can all live, and, at any rate, for a short time thrive, in this bed of earth, which bed likewise fosters the hatching out of the ova of flies, the latter being then able to convey the infection of these diseases. The place of diy-earth is now being taken by a liquid disinfectant (diluted crude carbolic acid, saponified cresol or perchloride of mercury solution, being best) which is always kept in the pans. This not only kills germs but militates against the development of flies.

Lieut-Col. GLENN ALLEN, RAMC,* states that the most economic and most generally applicable conservancy method we can adopt to protect British troops from enteric fever is—

1 To abolish the diy-earth system entirely in the latrines.

2 To substitute a weak antiseptic, viz., crude carbolic acid, half an ounce to the gallon.

3 The pans to be filled two-thirds full every morning with this solution and emptied when requisite. The very weak solution of carbolic acid is simply to prevent the access of flies, to counteract putrefaction, and lower the resistance of sewage bacteria.

4 Empty the pans directly into the chamber of a special steriliser, thus doing away with the objectionable receptacles.

5 The steriliser to be placed in the space behind the latrine.

6 To abandon all shallow trenching, whether on the Allahabad or the Thornhill pattern. The trenches to be 3 feet deep and to be filled in when about 12 inches from the surface.

In the event of any form of pail system of removal being used, it is necessary to know the quantity of excreta that will have to be dealt with to estimate the number of cylinders and of carts required. Each person in a mixed force of European and Native troops discharges on an average 8 ounces of solid faeces and 50 ounces of urine, roughly there would be 60 ounces per man per diem to deal with, which with a mixed infantry brigade of say two British and two Native infantry regiments, would mean about 1,500 gallons of sewage daily. As ablution after use of the latrine is practised by Native troops an additional 40 ounces per man has to be calculated for, and where liquid disinfectants are used for British troops, about 10 ounces per man estimated for. The carts are usually of 60, 80, 100, or 150 gallons capacity, and the cylinders 6 gallons from which the numbers needed may easily be ascertained.

LATRINES—Fixed Metal Latrines—For European troops permanent or fixed latrines of some kind are in use in all cantonments. These are usually constructed of burnt bricks or masonry and the forms in use are not such as to meet with general approval amongst military sanitary officers. The fixed metal latrines employed in many large towns in India are much more sanitary. There are many patterns of these metal latrines which vary somewhat in details of construction. In these fixed metal latrines the roof should be water-proof and extend beyond the area of the plinth, the floor should consist of a raised platform of stone or burnt brick covered and jointed with cement. The latrines should be placed at a reasonable distance from barracks and bazaars, where they will not be a nuisance and yet be convenient for use.

The floor should in all cases be of cement and water-tight, the platform for sitting on of wood, or for squatting on of iron, brick set and faced with cement, or glazed earthenware.

Movable metal latrines—Movable metal latrines are applicable to Native regimental lines where there is abundance of spare ground. Those known as the "Delhi Durbar pattern" are now largely used in cantonments for Native troops and regimental bazaars. They are very simple in construction, consisting of compartments enclosed by sheet iron set in angle iron, the ordinary surface earth forming the floor, on which are placed the metal pans. The user squats on a platform made from sunburnt brick, stone, or iron with foot rests. The position of these latrines should be changed at least once every fortnight, and the sites they occupied dug up for half a foot or so and raked, so that all parts of the recently occupied area is thoroughly

exposed to the disinfecting action of the sun. The site should not be used again if possible for three months. Whilst these latrines are fairly clean, easy to work, and free from the nuisance associated with all the older forms of fixed brick and masonry latrines, they cannot be compared from a sanitary point of view and facility for clearing with the fixed metal latrines, having a raised cement-covered floor described above.

Trenching of Excreta—Selection of site for trenches—Low-lying land subject to flooding or water logging, or not drained properly during the rains, should never be selected. The best site is well-drained high land, with a loamy soil, situated to leeward of the cantonment screened from the public and not too remote. It should be where at least two trips may be made by the night-soil carts in the 24 hours. When moderately near at hand, it prevents the drivers emptying the carts, cylinders or pails on the roadside into ditches or other tempting spots. If no elevated site is available, the land should be raised and thoroughly drained. Provision should also be made to prevent higher ground around draining towards the trenches, if necessary by intercepting drains around the site, the soil excavated from these drains may be used to elevate the trenches. For such excavation earth may be excavated from a neighbouring plot, and so forming a sort of tank, the water draining into which will subsequently be useful for washing the carts, cylinders or pails, and for irrigation purposes during the dry season. If this tank breeds mosquitoes it should be powdered or kerosened.

Before describing the methods of trenching excreta in use in various cantonments, we may here give a brief account of a system of trenching employed in several large towns, to which, if carried out under strict supervision, there are few objections.

Preparation of the trenching ground—The ground should be levelled, drained and divided into 12 equal plots, these being intercepted by roads and cartways for carts, sweepers, etc. Each part should be of sufficient size to accommodate a month's excreta. The plots will vary in size according to the population of the cantonment or part of the cantonment for which the trenches are required. The amount that each trench takes will vary according to the depth of sewage put into it. This latter varies from 2 to 8 inches, according to the depth of the trench.

Area required and description of trenches—There are two kinds of these trenches in use—(1) *Shallow*, 2 feet wide and 9 inches deep, with a wall of earth 1 foot thick between the rows of trenches, into this shallow trench 2 inches of night-soil is deposited, (2) *Deep*, 2 feet wide and 12 to 18 inches deep, with a 1-foot wall between each trench. It receives 8 inches of night-soil.

The area required for the shallow system is 180 sq feet per day per 1,000 persons. This area includes the trenches and ground between the rows of trenches. Multiplying this by the days in the year, the area required to allow each day's area remaining fallow for one year is 65,700 sq feet, which is about 1½ acres. The actual area required for 1,000 persons with the deeper trenches would be only one-fourth of this, or a little over one-third of an acre. These are maximum allowances to permit of 12 months' rest of the soil. This liberal area is always preferable to a restricted one.

Filling of trenches—This is best done by the scavengers emptying the pails directly into the trenches. If carts are used, they should not be emptied at one end of the trenches and the sewage then raked along to the other end—this creates an abominable nuisance. It is preferable to empty the contents of carts into pails at the trenches, these being carried to the trenches and deposited one by one along the trenches. The trenches for one day should be in one long line and not in a parallel series—the plot for the month being just sufficient for one trench a day. The earth used for covering the deposited night-soil should be heaped up and not merely made flush with the surface, as the heaping up allows for the sinking in of the night-soil which is inevitable. If hollows form during the rains, they may become a great nuisance.

Cultivation of trenching grounds—Trenches should always be cultivated after the night-soil has rested three months. The ground should be ploughed up and sown with tobacco, ryegrass, sugar-cane, etc. After the first crop the plots are ready for vegetables of all kinds which may be cultivated and sent to market without any risk of being causes of disease through their production on the trenching ground. In dry places with dust-storms, it is necessary to irrigate the trenches to prevent the night-soil hardening and being blown about as dust.*

The chief drawbacks of this system are its expense and the difficulty of ensuring a sufficient amount of responsible supervision.

Trench systems in use in Cantonments—One of the general methods of trenching night-soil now adopted in Indian Cantonments is that which originated at Allahabad, and is known as the *shallow trench system*. The principles comprised in this system are—the conversion of organic into inorganic matter, and the best means for utilising this change for the purpose of practical forming. The object arrived at is the total destruction and nitrification of the sewage in the shortest possible time, so as to enhance soil production of vegetation and enable the soil to be used as a trench again as expeditiously as possible.

* Prof J W Simpson, *The Principles of Hygiene as applied to Tropical and Sub Tropical Climates*, pp 229-233.

Shallow trenching of night-soil as conducted at Allahabad, Lucknow, and many large cantonments in India, and trenching after the Thorndill system, makes the undertaking at any rate a financial success, but there is not a unanimity of opinion amongst military medical officers as to either of these methods being hygienically perfect or free from risk to the health of troops. It is not altogether prudent to rely upon the soil (an agent the physical conditions of which are liable to such great variations) to convert the often dangerous sewage into harmless and valuable manure without danger to the health of the community.

A considerable amount of discussion has arisen regarding the Allahabad shallow-trench system, which has by some been condemned as liable to lead to disease, and by other authorities been eulogised as the entire solution of the problem of the final disposal of night-soil in India as there appears to be some misunderstanding. As to what this system is, and as in several stations the original method has been deviated from considerably, one would here give the description of it by the officers who originally designed it, Majors A C WILLIAMS and D J MEAGHER.

"The superficial area of each space required for the contents of a Crowley pattern filth cart, containing 60 gallons, has been found to be 80 sq feet. The area required per cart of other dimensions can be readily calculated on this basis. The most suitable dimensions for this 80 sq feet are 16 feet long and 5 feet broad. Three inches of the top surface of this space are removed and placed on the embankment of the plot, nearest to which the first line of trenches is dug. The land is first *gahta banded* (divided into plots by low embankments) and the trenching begun close to the embankment. The subsoil thus exposed is well pulverised to a depth of at least 9 inches. When the contents of the cart are tipped into the centre of the trench, the liquid matter rapidly soaks into the loosened soil, while the solid excreta remain on the top. This solid matter is less than one-eighth inch thick. Three inches of earth are then removed similarly from the top of the next trench, which is dug parallel to the first, with no intervening space. The soil dug from the second trench is thrown over the night-soil of the first trench, and the process repeated. The above generally applies to cantonment filth-carts which contain a large quantity of urine and cook-house water, the night-soil comprising only about one-third of the contents. The municipal filth carts, employed in bazaars and cities, on the other hand, largely contain solids, as owing to the defective sanitary arrangements, the liquid is not collected. In this system, therefore, there is no necessity to pulverise the bottom of the trench."*

The system of surface disposal enables about seven times as large an area of land to be manured as could be done under the deep trench system with the same quantity of manure. Such land rents readily at from Rs 20 to Rs 50 per acre, and this means that it is very possible to raise the revenue of cantonments under this heading very considerably.*

Objections to the Allahabad Shallow trench system—Many objections have been raised against this shallow-trenching, the chief being—

1 That it spreads enteric fever through specifically infected dust, or by washing bacilli of this disease into watercourses during the rains. Investigations carried out in military stations where it has been conducted on a large scale, especially in Lucknow and Allahabad, do not lend support to this objection, in point of fact that has been a decrease of the disease in these stations. In all probability other factors unconnected with the night-soil trenches have combined to bring about this disease in some stations, either from defectively worked latrines in cantonments, or through enteric "carriers".

2 That flies are propagated in the trenches and through them the disease disseminated. In all probability this is the case.

3 That the trenches are a great nuisance from offensive smells arising from them. This is an unfounded objection when the system is properly worked and supervised. One has been over the trenches at Lucknow and Allahabad during different seasons and could not complain of the smell.

4 That during the hot weather fermentation of the excreta gives rise to the formation of gases which displace the thin layer of covering earth and exposes the faeces to the open air. This occasionally does happen, but can be readily remedied by the addition of further earth to the parts where any bubbling is observed on the surface.

5 That during the monsoon the system breaks down owing to the flooding of the trenches. The heavy rains of the monsoon season doubtless militate against the system, but any serious results are obviated by digging the trenches slightly deeper.

Notwithstanding the many points in favour of the shallow-trench system, it cannot be considered free from the possibility of disseminating sewage-borne diseases, and one personally is of opinion that if trenching has to be carried out, the system described in the first part of this paper is much less liable to be associated with the spread of these diseases than with shallow trenching.

Trenching grounds have on several occasions in India been accused as being the source of enteric fever. There is, however, no substantial evidence to show that when a trenching ground

* *The Farm Manual*, p 21,

* *Ibid*, p 22

has been properly selected, elevated, drained, situated to leeward of cantonments, well managed and supervised, it has been a source of that disease.

Swarms of flies over a trenching ground is practically always an indication of bad management. The ova of flies deposited in latrines are often hatched out in the trenching ground. Flies infest neglected latrines and are specially fostered by an unclean, insanitary, and badly-managed pail system. Personally I consider that the dry-earth system should be permanently banished from all cantonments. One has no doubt about its being a source of bacillary dysentery, infective diarrhoea and enteric fever.

All conservancy work connected with removal of night-soil to trenches should be carried out in the day time when supervision is possible and the sun can assist in reducing any nuisance caused. Night work cannot be properly superintended, and the darkness offers temptations to the workmen to deposit excreta in places not intended for the purpose.

Destruction of excreta by Incineration —A large number of Indian cantonments are now being provided with incinerators, into which the excreta are thrown directly from the latrine pails. This does away with both the conservancy carts and the intermediate receptacles in which the excreta used to be collected between the visits of the carts. The main object aimed at in these incinerators is to once for all do away with the risks associated with trenching, and completely destroy all cantonment ordure practically *in situ*. In all cases the latrines of the cantonment are divided up into groups, each group being connected with one incinerator into which all the excreta are conveyed direct from the latrine pans. Where the latrines are remote from one another a small incinerator may be used for each. The fuel employed is stable litter, road sweepings, dry refuse of barracks and bazaars, leaves of trees, etc.

Attached to each incinerator is a shed for storing the combustible refuse and keeping it dry during the rainy season, and a hut for scavengers, one of whom is always on duty attending to the incineration.

There are various patterns of these incinerators in use, those most generally employed at present are RAITT'S, or the *Ruwalpindi pattern* and HUNT'S or the *Mhow pattern*, both of which are open incinerators, and the *Sialkote* and COOK-YOUNG PATTERNS, which are closed incinerators. The Mhow pattern is considered to be an improvement on the other forms of open incinerators.

The Mhow pattern incinerator which is circular in shape, is constructed of iron bars fitted up on 1½ inch angle iron rungs at the top and bottom, with iron sheeting around the lower part of the perimeter, it has a covered chimney in the centre to create a draught through the furnace, the draught being regulated by four

doors placed at equal distances around the perimeter. The bottom of the incinerator is made of iron bars 1½ inches apart, upon which the dry refuse is thrown. When incineration is in full swing, the ashes accumulating between these bars is set free by raking with an iron rod. The incinerator may be covered by a circular sloping shed consisting of iron sheeting supported by bars of angle iron.

In using the incinerator the body is filled with dry refuse fuel to within a foot or so of the top of the chimney. This is lighted from the bottom and from the side doors, and allowed to burn for from 3 to 6 hours, according to the size of the incinerator. When there is a complete glow in the furnace, the contents of the privy pans, liquid and solid, are emptied upon the furnace and lightly covered with fresh fuel and burnt to an ash. The ordure is to be distributed uniformly all round.

An incinerator of this pattern 7 feet in diameter will dispose of 125 gallons of liquid and solid ordure in 24 hours, with a consumption of 45 cubic feet of litter of fairly combustible quality, when recharging this incinerator, it is only necessary to take out the ash with the long iron rods and rakes kept for the purpose, and level the still glowing residue upon which a fresh charge of fuel is located, allowed to burn freely, and then another lot of ordure is added as before.

Raitt's pattern is much the same as that just described except that they have hitherto been made larger, the size being generally from 10 to 13 feet in diameter. They are circular in shape, made of iron hooping radiating from a centre, and attached to a framework of angle iron at the circumference.

The chief objections to these open incinerators at present are—difficulty of obtaining sufficient dry refuse for the complete combustion of ordure, dampness of the dry refuse during the rains, even when drying sheds and roofs are provided for the incinerators, the unpleasantness associated with the fumes from burning damp refuse during the rains (which could be partly overcome by a higher chimney), the difficulty of regulating the combustion, the effect of high winds in blowing ashes and debris from the charged incinerators (to some extent obviated by wind screens), the fact that they have some trouble in dealing with the urine, absence of any arrangement for consuming the smoke created, and the amount of repairs required. To be economically worked the fuel should consist of dry refuse, fallen leaves of trees, etc., which are not always easy to obtain, store, and maintain in a dry state in sufficient quantities to keep the incinerators working regularly throughout the year. One has no doubt that most of these difficulties will be eliminated in time.

The Sialkote incinerator —This is a pattern in use in a large number of stations in India,

and is designed to effect the complete combustion of all excreta and ablution water under a closed incinerator. The body of the incinerator is composed of bricks which should be of the best quality and set in lime. Angle iron is used for the bars which form the grating, which are fixed at a height of 12 inches from the floor, there being a clear space between each bar of 1½ inches. The doors for the large incinerators, and the wind screens and roofs of the small incinerators, are made of sheet iron in an angle iron framework. The cover or door fits into the openings in the large incinerators and is removed as required. The furnace is fed from above. The draught enters from four openings made below the grating. The inside of the furnace is dome-shaped to avoid angles and enhance the draught. The larger pattern (for 700 persons) is used for regimental and bazaar latrines. In them the chimney is constructed over the centre of the furnace, the opening for charging being on the dome just above the beginning of its curve from the lateral walls.

In these also the privy pans are emptied directly into the incinerator, and as soon as possible after the pans have been used. This obviates the gathering of flies. A two-roomed shed is constructed in the vicinity of the incinerator, one room for storing refuse and the other for the scavengers who attend to the incineration. It is stated that the ashes left after incineration is a valuable manure for heavy soils. The chief advantages claimed for this incinerator are durability and simplicity, economy in construction and subsequent working, independence of meteorological influences, the litter used cannot be blown about, the fire is easily lighted, and the process of feeding and maintaining the furnace in action is very simple.

The chief defects met with in the construction of the Sialkote incinerator are—that the interior of the body is not domed but has angles at the junction of the four walls, the air-inlets at the bottom are made too small, the chimney is too short, and the angle iron used is too soft so that when overheated it becomes soft, loops and falls out.

The COOK-YOUNG incinerator is a square brick structure which also uses dry refuse for incineration of excreta. The bed for the refuse is formed of iron bars. Arrangements are made at the sides for draught and the fumes are carried away by a chimney in the roof. For dealing with a small amount of ordure, such as that of a regimental or station hospital, this is a handy incinerator. It may also be used for the grouped latrines of detachments of men up to 250 or 300. It deals with both solid and liquid excreta.

Another form of night-soil incinerator one has worked consists of an elongated rectangular brick chimney 24 feet in height, broad below, narrow above, at the bottom of the chimney is a grate formed of parallel thick iron bars

about 1½ inches apart, stretching from one side of the base of the chimney to the other. About 3 feet above the grate is a window in one side of the chimney, approached by brick steps. Four openings for draught, 1 foot square each, are situated at the base of the chimney below the grate. The upper surface of the grate is thickly packed with dry refuse and the sewage is shot on to it. The incinerator is started by wood fuel, lighted in a space below the grate. After each day's sewage is incinerated, the ash is raked out and a fresh quantity of dry refuse and excreta added. The excreta are carried in pails of one cubic foot capacity by scavengers, two on the ends of a bamboo which is slung over the shoulder and carried by each man from the latrine, and thrown directly from these pails on to the incinerator. These pails are those that are actually placed under the seats, and when carried are provided with water-tight lids. In two stations where one worked this form of incinerator, the daily consumption of wood fuel, besides 35 cubic feet of dry refuse for the excreta of 850 persons, was 3 maunds. The distance was in one case 400 yards from the barrack latrines and in the other 450. There was practically no nuisance attached to the working, except occasionally from trickling of the liquid part of the ordure on to the ashes; when this happened ashes and all were returned into the incinerator. This is the least expensive method of dealing with the night-soil of a cantonment one is acquainted with. There is nothing to get out of gear, and the only recurring expense was that of renewing the iron bars of the grate. In the instances above quoted the urine was to a large extent collected separately, conveyed in the same kind of pails, and trenched. The capacity of the incinerator was limited to dealing with 15 cubic feet of mixed ordure in the 24 hours, about 7 cubic feet of which consisted of solid faeces and 8 of urine. This will be recognised as a closed pattern incinerator of the Sialkote type.

It may be considered that all these incinerators are still in the experimental stage, and one is of opinion that when some pattern is perfected, the ultimate outcome will to a large extent solve the problem of dealing at once and the same time with the night-soil and dry refuse of cantonments and comparatively small communities, when health and not profit is aimed at.

Septic Tank System.—The *septic tank* or liquefaction process consists of permitting the crude sewage to pass slowly—usually the time allowed is 24 hours, but this is altogether too short—through a closed tank from which light and air are excluded. During this passage the solids become liquefied, chiefly, it is considered, through the action of anaerobic micro-organisms, the sewage on leaving the tank is made to pass over clinker, coke, breeze, or other filtering medium, the effluent being allowed to pass into streams, rivers, or natural water channels.

The tank roughly imitates the action of a filter-bed in water-works the principal agency of which is the action of micro-organisms in the thin slimy layer resting on the upper layer of sand in the filter.

In cantonments, septic tanks in association with the pail system, have not so far been tried on a sufficiently large scale to form any definite opinion as to their value or applicability in the sanitation of cantonments. They have been tried in a few stations and the reports on them are conflicting.

DRUGS AND DRUG HABITS IN BURMA

BY R H CASTOR,
LIEUT COLONEL, I M S

WHILE in charge of the Rangoon Central Jail, I saw a good deal of prisoners addicted to the use of drugs and then thought it would be interesting to discover the proportion of prisoners who use the same, and the favorite drugs resorted to by them. The result of my investigation is given in this paper.

The classes I have divided them into are—(a) The convicted, (b) The Undertrial, and (c) Civil prisoners.

(I) *Convicted Class*—Of this class the great majority, more than 90 per cent, were Burmans.

Of 1,885 admissions, 512 were addicted to drugs in this proportion—

Opium Eaters	193
Alcohol (Beer, Whiskey, etc)	130
Morphia Injectors	85
Opium Smokers	50
Opium Eaters and Morphia Injectors	17
Toddyists (native liquor)	10
Cocaine Eaters	6
Opium Eaters, Morphia Injectors and Alcoholists	6
Opium and Cocaine Eaters	4
Morphia Injectors and Cocaine Eaters	4
Opium Smokers and Alcoholists	2
Opium Smokers Morphia Injectors and Cocaine Eaters	
Spirits (native liquor)	2
Ganja Eater	1
TOTAL	512

(II) *Undertrial Class*—There were 945 admissions of this class and 172 were addicted to drugs in the following order—

Morphia Injectors	51
Alcoholists	40
Opium Eaters	28
Morphia Injectors and Morphia Eaters	23
Opium Smokers	7
Morphia Injectors and Cocaine Eaters	6
Cocaine Eaters, Morphia Injectors and Opium Eaters	
Morphia Injectors and Alcoholists	4
Opium Eaters and Smokers and Morphia Injectors	4
Opium Eaters and Alcoholists	3
Cocaine Eater	2
Opium Eater and Cocaine Eater	1
Opium Eater and Smoker	1
Alcoholist and Cocaine Eater	1
TOTAL	172

(III) *Civil Class*—This class of prisoners were in jail for being unable to pay their debts. There were 158 admissions during these months and 8 of them were addicted to drugs.

Opium Eaters	3
Alcoholists	3
Opium Eater and Morphia Injector	1
Toddyist (native liquor)	1
TOTAL	8

Of the one drug class there were six divisions—

Opium Eaters	224
Alcoholist, including native liquor	186
Morphia Injectors	136
Opium Smokers	57
Cocaine Eaters	7
Ganja Eater	1
TOTAL	611

Of the double combination there are nine divisions—

Morphia Injectors and Eaters	23
Morphia Injectors and Opium Eaters	18
Morphia Injectors and Cocaine Eaters	10
Opium and Cocaine Eaters	5
Morphia Injectors and Alcoholists	4
Opium Eaters and Alcoholists	2
Opium Smokers and Alcoholists	2
Opium Eater and Smoker	1
Alcoholist and Cocaine Eater	1

Of the treble Combination there are four Divisions

Opium Eaters, Morphia Injectors and Alcoholists	6
Opium Smokers, Morphia Injectors and Cocaine Eaters	4
Opium Smokers, Opium Eaters and Morphia Injectors	3
Opium Eaters, Morphia Injectors and Cocaine Eaters	2
TOTAL	15

The following conclusions may be drawn from these facts—

(a) The first division may be called the criminal class, the second the doubtful class, and the third, the more respectable class.

(b) Opium eaters are the most numerous in the first class, morphia injectors in the second class while opium eaters and alcoholists share the first place in the respectable class.

(c) Of the total number of admissions, 2,988, 692 or 23 per cent were addicted to drugs.

(d) Of the convicted class out of 1,885 admissions, 512, or 27 per cent, were accustomed to drugs.

(e) Of the undertrial class, there were 945 admissions and 172 were druggers, or 18 per cent.

(f) Of the civil class (158), 5 per cent were disposed towards drugs.

(g) That the drug habit is far more prevalent in the criminal classes than in the respectable class, the doubtful class standing, as was expected, between.

(h) Analysing the total inclined to drug habits, 88½ per cent relied on one drug, 9½ on two drugs, and 2½ per cent on three drugs.

(e) Analysing the drugs individually, 71 per cent took opium in some form or other, 29 per cent took alcohol and 4 per cent relied on cocaine, while only one (and he was an Indian) took to *gunja*.

(k) That opium eaters and smokers came to 324, whilst morphia injectors came to 206, whereas in Europe morphia injectors constitute the larger number.

I have not taken into account tobacco as it is generally consumed, and is used for chewing, smoking and sometimes for snuffing. The percentages will probably be 90 per cent for smoking, 25 for chewing and 5 for snuffing.

In all these cases the drug habituation had a tendency to grow, and in some cases the dose taken was very large, but I regret I cannot give the exact amount taken of each of the drugs. The largest amount of opium consumed in a day was about 250 grains.

With regard to the habituation of these drugs it was difficult to find out how they first arose or at what age the habit commenced. A good many said it was due to association, others to ward off pain and sickness, and others to the singular excitant effect produced. What part heredity plays is not well understood, but Bouaidel states that the "morphinist father tends to beget children whose vitality is from the beginning not only seriously impaired but specifically biased." Again, Sainsbury in his excellent work on "Drugs and the Drug Habit" states that "it has been established that the unborn child may acquire the habit from the mother." The opium habit in a good many cases undermined the health of the persons using the same, while their skin was often covered with signs of the needle pricks which sometimes resulted in subcutaneous abscesses. The effects of alcohol are so well known that they are not alluded to here. Cocaine was apparently resorted to for its effects in small and medium doses at first, but "with use a rapid tolerance is effected," and the doses then soon rose. Sainsbury states "it is not uncommon for the cocaine habit to exist along with the morphia or alcohol habit, the cocaine having been introduced in the vain hope of breaking the one or other habit already acquired." From a reference to the figures it will be seen that opium, including morphia, was combined with cocaine in 21 cases, while alcohol and cocaine were combined only in one case, but I cannot say how far it was introduced with the "vain hope" mentioned. I did not see any marked effect on the health of the persons devoted to cocaine, this was partly due to the comparatively short time the drug has been used, partly to the doses not being very large, and partly to the small number disposed towards this drug.

Those more interested in this subject should consult Sainsbury's book on the Prevention and Curative Treatment of these Habits, but

I may add that with regard to the opium habit in the great majority of cases the drug was withheld as soon as the prisoner was admitted into the jail and a cure was effected in this way. In other cases the health was so undermined that the prisoner had to be admitted to hospital for treatment, the dose of the drug gradually diminished, and a cure was finally established provided he was a long time. In very few of the cases did the patient actually succumb to the effects of the drug alone in spite of treatment. As a rule 10 to 15 per cent of the total mortality occurred in those addicted to the use of opium.

INTRACAPSULAR REMOVAL OF CATARACT EXPERIENCES AND SUGGESTIONS

By H F LECHMIRE TAYLOR, M.A., M.D., D.P.H.,
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THE literature of "Smith's operation" has already reached such proportions that one is hardly justified in adding to it, unless it be to impart something founded directly on personal experience and conscientious observation. There is no doubt that the last word regarding the principles, the technique and the results of this and other methods, has yet to be written. The success or general applicability of any operation for cataract must eventually rest on how far the man of average skill and experience can make use of and get satisfactory results by it.

At the outset, one cannot but state the suspicion that a certain amount of disservice has been done to "Smith's operation" by its upholders. When those who have attained the rank of experts emphasise so strongly the minutiae of manipulation, when they assert that without a most carefully trained assistant it is disastrous to practice it, and finally, when they state that without personal tuition it is practically impossible to acquire the necessary technique, the ordinary man in charge of a busy general hospital, with other duties also to attend to, is inclined to sit down with a sigh and resign himself to doing without "Smith's operation," as he resigns himself to doing without a cystoscope, an X-ray outfit or a keratometer. Now I, for one, fully realise the value of personal tuition, though I have had the privilege of only such instruction as could be given in an hour or two during a hurried morning visit to Jalandhar. That everyone who can, should go and learn personally from Lieutenant-Colonel Smith (whose kindness I, with many other beginners in the operation, most gratefully put on record) I have not the least hesitation in urging strongly. That, whatever be his former experience, he will learn a great deal and come away deeply impressed with what he has seen, I am equally certain. But to discourage, by prophecies of

certain failure, those who cannot do so, seems to me to be a profound mistake, and a policy bound to raise prejudice against the operation. Most of us have painfully had to learn other difficult and tricky operations by such help as books can give and have succeeded, and this, I hold, is not beyond the pale of possibility in this instance also for any man who will take care to master the principles involved, and has average wit and skill to carry them out. If along this road lies salvation it should surely be made as smooth as possible for the way-faring man, and not blocked with artificial barriers which will daunt any but the most fearless, fortunate or skilful of travellers. In what follows I would ask to be regarded not as one who has "arrived," but as one who is still plodding along the road, with much ground yet to cover.

First, then, take the question of the skilled assistant—the initial obstacle which effectually bars the way for many. *Is he really an absolute necessity?* I tremble to put the question, knowing with what a crushing rejoinder I may meet from those who have a much fuller experience to go on. But if the answer is to be inevitably in the affirmative, then good-bye to the operation for many who are nevertheless anxious to do the best they can for their patients. My own experience is that the skilled and trained assistant is not an absolute necessity, that he is an immense help and a safeguard I do not question. I began in a very tentative fashion to do extraction in the capsule a couple of years ago, with an assistant to whom I had explained as fully as I could, by word of mouth and by demonstration, what were his duties. I found that his "help" was not infrequently a negative quantity after the first two or three cases of the morning's work his attention was very apt to wander, with the result that disaster, in some shape or form, was almost inevitable. I was unable in the circumstances of my hospital to allot one man for this work alone, and to have several dressers all highly trained was out of the question. I began, therefore, to dispense with the assistant, as far as the upper lid was concerned. The only alternative, be it remembered, was to give up the operation altogether, and this I was loth to do without a thorough-going attempt to find some way out of the difficulty. The lower lid, though in my opinion the more important, is very much easier to manage than the upper, and an ordinary surgical dresser is quite competent to look after it with a very little training. A strip of gauze or lint is placed along it as close to the edge as possible, to prevent slipping, and the dresser is taught to hold this firmly down with the index and middle fingers, to make sure of its ends being kept well off the globe. The operator's left hand holds up the eyebrow with its ulnar edge and fingers, and the elevator is held firmly and perpendicularly in the same hand by the thumb and the first finger clasped

round it. First the lower lid is well depressed, and not till then is the upper lid raised at the slightest sign of slipping of the former, the latter is relaxed, till it is secured again in good position. Vitreous has seemed to me to come invariably as the result of lower lid pressure exerted on a globe not supported by the upper lid, and it seems to me an advantage of the one-hand method described that the operator himself has control over this important element of the problem.

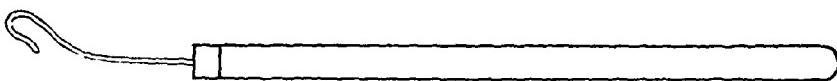
The great disadvantage, of course, is that one is left literally single-handed for other manipulations. This disadvantage has not proved so fatal as might have been expected. The instrument tray is always placed so as to be easily reached without any movement or straining of the body, and the instruments laid in regular order, so that they can be replaced or picked up with only the corner of one's eye on them. If vitreous appears or ruptures the expressor is laid down at once, every thing about the eye being kept absolutely rigid, the vectis is picked up and the lens removed easily, and in the vast majority of cases with no further loss of vitreous or rupture of the capsule. The latter is the difficulty when it occurs, but if it is to occur often, it condemns the whole operation straight away, and when it does occur, I don't know that one fails to remove it satisfactorily any oftener in the single-handed procedure than in the other. As there is no reason why it should occur any oftener in the former method than in the latter, there does not seem to be much to choose between them from that point of view. In this matter, however, I hold myself open to conviction—the conviction of actual experience, not of theory. When the operation is completed, the upper lid is carefully replaced, and finally the lower lid is allowed to assume its position. When all had gone well so far I have sometimes seen loss of vitreous occur as the result of raising the upper lid again by the finger to see how things were, thus allowing the lower lid to act unopposed on the globe.

Again I would repeat that it is with great diffidence I describe this method of procedure, but laying claim to no more than average skill and experience in cataract operating I would submit that, for those to whom a highly skilled assistant is out of the question, it leaves the way open for the trial of an operation which, if all that is claimed for it be true, means a considerable widening of our field of usefulness in this country.

Next comes the question of instruments. The more independent we are of special apparatus the better, and there is not the least reason why anything more than is found in the ordinary armamentarium should be required. Strabismus hooks of a particular form are recommended both for the elevation of the upper lid and for the expression of the lens, and these, certainly,

can be easily made. But I have invariably, after my first few cases, used an ordinary Desmarie's elevator; it gives a safe hold, raises the whole length of the lid satisfactorily, lets it down gently and equally (the last a not unimportant point), and is certainly more comfortable to the patient than a single hook. Probably every hospital with eye work has such an elevator at hand. The point, however, in this, as in other things, is that it doesn't matter a fig what is used, so long as the thing is properly done. As regards the expressor, I began with a hook as recommended, but I must confess I never liked the single point pressed hard into the ciliary region, which prejudice this, probably! However, my hook having become rusty and rough, I had to turn to something else. A silver spoon was at hand. Giving it a slight bend forward at the neck I found I had an instrument which served my purpose admirably: its edge took an excellent grip for the downward and backward pressure, its smooth back seemed more suitable for drawing over the cornea than a hook, and it met the end

subsequently in not a few cases it seems to be paralysed and to have lost its natural elasticity and mobility, owing perhaps to the pressure it has undergone, especially when "expression" has been difficult (I always do an midectomy). Combined with this is the difficulty of the position of eyeball (generally rolled far up) and lid, which renders access difficult. It is absolutely impossible to bring an ordinary repositor to bear, and if the hook is used (as seems to be the orthodox procedure) its point has to be passed in almost at right angles to the surface, and not only is anything like "striking" of the iris out of the question, but the vitreous (as I have seen) may be ruptured. Moreover, when the palpebral aperture is small and the fornix contracted, the hook cannot always be manipulated. The situation requires an instrument which can be easily passed up under the lid and has an aim which will lie flat and parallel to the plane of the iris and sweep it into position. Such an instrument is easily obtained by giving an ordinary silver iris repositor a bend as shown in the sketch.



which Wanless' new instrument is designed to meet, it lifted out the delivered lens easily and tidily.

Another point—a vital one, in my opinion—requires very careful and open-minded study. For a long time I was greatly troubled about the irises. In not a few cases done by others I had seen projections through the wound as large as a pea, or larger, and though I had not had many such to deal with in my own practice I was more and more deeply impressed with the dangers of even small prolapses and impactions. Only a few months ago a memorable case (one of my own) was in my hands, where the patient had gone out with excellent vision after a "Smith's operation," but with a pinhead prolapse at one end of the wound. A few weeks later he returned with the symptoms of a sluggish uro-cyclitis—a slightly muddy iris and turbid aqueous, a certain amount of circum-corneal injection and tenderness of the globe, with a minus tension. In spite of regular treatment the condition got steadily worse, and the eye was lost. The weakness of Indian hospital practice in this department, as in others, is the very limited opportunity of seeing and studying after-results. There must be, I am firmly convinced, not a few histories parallel to the above, of patients who figure in our statistics as "cured," but one seldom meets them. Even one case, however, is enough for a lesson. I wonder if others have found, to anything like the same extent, the difficulty I have experienced in getting the iris well replaced after "Smith's operation," and preventing prolapse.

Since using this I have found that my difficulties in what had formerly seemed to me an exceedingly difficult part of the operation have largely disappeared. It comes in usefully also in some cases of the "old operation," when the straight repositor is difficult to get in. It is used, of course, from below, with the handle over the patient's cheek. In this connection arises another point of practice which again I would submit with considerable diffidence.

One of the chief claims of "Smith's operation" is that it largely removes the danger of iritis, and I, for one, must confess that I have been much impressed with the freedom from this most annoying complication when the lens is removed intact. The entanglement of soft cortex in the iris and of tags of capsule in the wound seem to be the great founts of post-operative inflammation, the actual agents I suppose being invariably bacterial. Where these can be avoided there seems no reason to anticipate iritis, except in the small proportion of cases where sepsis is introduced and attacks the iris directly. Now the routine use of atropin seems to be founded on the dread of iritis. In common with many others I have long since discarded the use of atropin before the operation, but, as seems practically universal, had used it regularly and freely after it. The whole question of prolapse and impaction of iris made one reconsider this point also. Provided that the fear of iritis can be put aside, does it not seem rational to suppose that the less the iris is bunched up and lodged against the line of healing wound, the less chance there is of its

being included or attached? It is quite an arguable point whether a freely moving iris is not a most desirable thing, if one wants it to remain free of any attachment to the wound. In marginal ulcers of the cornea one is taught to use Eserin instead of Atropin to prevent prolapse, even though the danger of iris in such conditions amounts almost to a certainty. If, therefore, in cataract operations, with presumably a clean wound of the iris (and modern pathology seems to point to all real inflammations being infective), we can manage to secure an iris, unfolded and drawn well away from the wound, have we not attained that which we should aim at? Acting on this hypothesis I began, first, by giving up the use of Atropin altogether till the 4th or 5th day after the operation, and, seeing no bad results ensued, went on to the regular instillation of Eserin immediately after the operation and daily for the first few days. This now forms the routine after-treatment of all "Smith's cases" in this hospital, and not only has there been no increase of iris, but, so far as present experience goes, the results as regards the position of the iris are decidedly better than before. I am inclined to think also that there is less of that persistent, though slight, tenderness and irritability which used to occur not infrequently in some of these cases, and which I used to ascribe to traumatism in the uveal region, for want of any other explanation. On this point, however, I cannot speak with much certainty, as the length of time of keeping the eye bandaged has also been prolonged (to 8 days at least), and this may possibly have something to say to the matter.

For a time I adopted the post-operative use of Eserin in "ordinary cases," but quickly gave it up as I found that it was very common to get an adhesion forming between iris and capsule or fragments of cortex or even blood effusions in the pupil. That the iris had been effectively brought down by the Eserin there was no manner of doubt.

In regard to intracapsular removal of cataract there seem to be two chief desiderata at present. There is, firstly, an urgent need for a clear and reasoned exposition of the indications for and against it. The claim is made for Smith's method that it suits practically all cases of senile cataract, in practically any stage of its development. Many of us would fain believe it to be so, but disconcerting experiences have made us a little doubtful. It may be that when our numbers have run well into the thousands we shall have greater freedom from mishaps. But for beginners, especially, it would be a great boon to have a full and candid pronouncement on the subject from those qualified to give an opinion. Several attempts have been made to lay down the lines of discrimination, and it is obvious that eyes with increased tension, fluid vitreous, small cornea or contracted conjunctiva,

present peculiar difficulties also that membranous cataracts and those adherent to iris, etc., are unsuitable, but quite unexpected difficulties in satisfactory delivery of the lens arise in cases which beforehand looked eminently adapted for this method, and in which, so far as one can see no faulty technique, such as too small an incision, can be blamed. There is probably something more fundamental in the way of a generalisation than has yet been enunciated, and good guidance in this direction would be greatly valued by many who believe in the operation and wish to practice it. Secondly, a thorough study of ultimate results and post-operative pathology, as worked out by competent observers in a large number of cases, is essential; this alone will "place" the operation, but for this we shall have to wait.

It is my rule to dress all my cataract cases myself and to examine them personally before discharging them. In the last two years' work, comprising over 1,000 cataract operations, I have done several hundred by the method described, the results as regards "care" being almost identical in those done by the intra- and extra-capsular methods. After further trial I hope to publish details. In the meantime I put forward these suggestions for the consideration of those who are qualified by experience and clinical study to judge as to their usefulness or otherwise.

A MODIFICATION OF MAJOR ROGERS' APPARATUS FOR THE TREATMENT OF CHOLERA BY HYPERTONIC SALINE INFUSION

BY F. C. RUTHERFOORD

CAPT., I.M.S.,

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In a short paper published in the *Indian Medical Gazette* of December 1910 on "A Series of cases of Cholera treated by Major Rogers' method" I suggested that, with some alterations in the apparatus, the method might safely be employed by Sub-Assistant Surgeons in unfavourable surroundings and without skilled assistance. I placed the matter in the hands of Messrs Down Brothers and Co., Ltd., of 21st Thomas Street, The Borough, London, sending them a description and rough sketch of the apparatus required and received the apparatus recently. I would here express my obligation to that firm for the great pains they have taken in carrying out my requirements. The sketches are a sectional elevation, $\frac{1}{2}$ size, of the apparatus itself and an elevation of the container, also $\frac{1}{2}$ size.

Description.—*A* is the container or sterilizer provided with a tightly closing hinged lid, padlock and handle. In this can be packed and

sterilized not only the apparatus but the instruments, dressings, packets of Rogers' powders for preparation of the solution, Rogers' calcium permanganate pills, etc.

B is the outer vessel or water bath. It will be noted that the metal tube (7) for the attachment of the rubber tube and Rogers' canula screws through this and through a corresponding hole in the inner vessel.

It (B) has hole (1) in the rim into which a funnel is inserted, and through this funnel hot water is introduced at the time of use.

The lower part of B is continued downwards and forms a shelf (2) on which a brass spirit lamp (3) is placed, the heat from which maintains the water-jacket and therefore the lotion at a suitable temperature.

B is provided with a handle (4) by means of which it may be suspended at a suitable height above the patient.

C is the inner vessel or saline container.

D, a perforated strainer in which a few thicknesses of folded and boiled gauze are inserted—to catch suspended solid matter in the saline lotion.

The rim of C is perforated at (5) and in this perforation is a canalized cork (6) through which passes a thermometer graduated to 200° F.

The hole (1) similarly admits of the insertion of a second cork and thermometer. These thermometers screw into strong brass cases to admit of safe transportation outfit required for the treatment of cholera in a private dwelling with this apparatus.

(1) The apparatus complete

(2) Suitable lengths of India-rubber tubing

(3) Rogers' canulae

(4) One scalpel stuck into a cork, one pair of scissos, one pair of dissecting forceps, two pairs of artery forceps, a few needles, one aneurysm needle, a bottle containing ligatures, preferably ready sterilized, a piece of stout wire or stilette of a catheter for clearing the canula in case (1) it should become blocked with clot.

(5) A few swabs, a few pieces of gauze 1 ft square, a little absorbent cotton and a bandage. A small bottle of tincture of iodine diluted to half strength with rectified spirits and another small bottle of collodium, a small bottle of liquor styrchnæ (B P) and a minim measure. A bottle containing packets of Rogers' powders or packets containing a known quantity of common salt, a bottle of Rogers' calcium permanganate pills. A cake of soap for the operator's hands. A small enamelled iron or tin funnel is also required. The spirit lamp should be filled with spirit before starting. All the above may be packed in the apparatus itself.

To Prepare for Operation. Unlock A and remove the contents, then replace B and C within A, after removing the spirit lamp and thermometers, instruments, swabs and a few pieces of gauze should be put inside at the same time. A is then filled up with water, its lid

partially closed and placed over a fire, boiled and kept boiling for 10 minutes.

It will probably be desirable to partially fill a bucket or old kerosene tin with water and boil it at the same time in order to have a reserve of boiled water which has been allowed to partially cool down.

Remove from the fire, put the instruments, swabs, etc., on to a boiled cloth, affix the India-rubber tubing and canula to (7) partially fill B with boiling water and insert a thermometer through the cork at (1) and also at (5). The thermometer cases may be occasionally sterilized by boiling, and the thermometers by soaking in liquefied carbolic acid and washing in sterilized water after which they can be screwed into their cases. A sufficient quantity of Rogers' powder or salt is then thrown into C, after which some boiled gauze is placed in D and D in C.

A mixture of boiling and cooled—cooled boiled water is then poured through the gauze in D. The spirit lamp is then placed below B lighted, and the apparatus raised to a convenient height (about 4 feet above the patient as a rule). The operation may then be begun, all that is necessary being to refill C with lotion as required.

General Remarks.—The stream of lotion should issue from the canula at a temp of 105° F. To secure this, with about 5 ft of India-rubber tubing, the temp of the lotion in C will usually require to be about 110° F., but this will, of course, vary with air temperature, length of rubber tube, etc.

The temperature of the lotion in C is regulated by altering the amount of water in B.

The capacity of C is 30 oz. When filled just short of the strainer D, so that 3 drachms of common salt, or an equivalent quantity of Rogers' powder, would be required for each re-charge.

The refills may conveniently be prepared in the outer case A after sterilization.

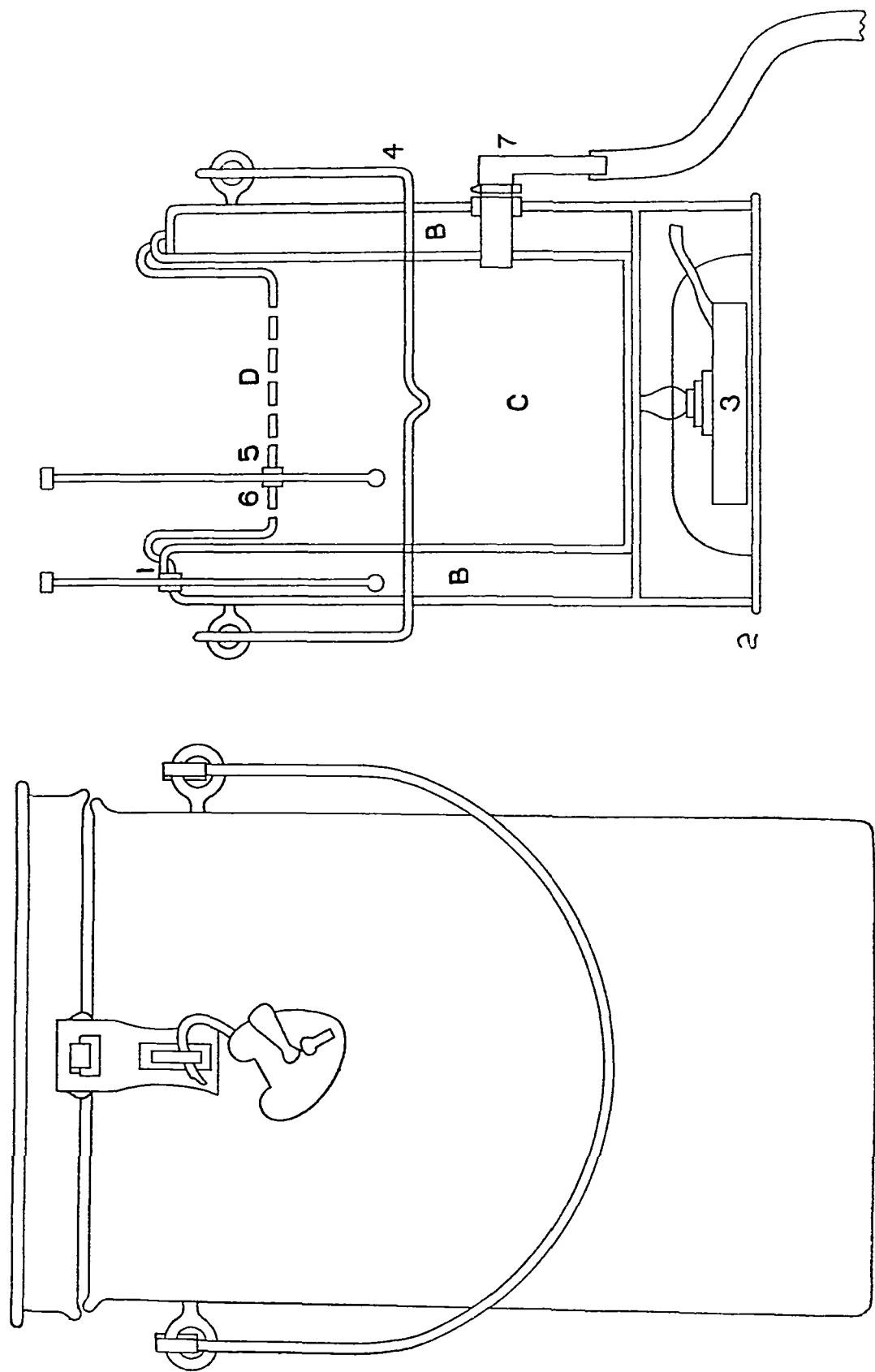
Price and Manufacture.—The apparatus is made in enamelled iron and its price with brass, screw topped lamp, thermometers and padlock complete is £1-19 6, say Rs 30. Messrs Down Brothers have had great trouble in preparing it, and the specimen made for me is braised. They inform me, however, that with large orders special machinery could be set up which would stamp out the whole apparatus from one sheet, thereby greatly facilitating the manufacture and reducing the price. I have written them suggesting that the apparatus might be made out of copper if the difficulties of outturn would thereby be reduced. The price quoted does not include canulae, rubber tubing, etc.

It will be noted that the apparatus is sufficiently strong to be carried on horseback, etc.

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CHOLESTERA BY HYPERTONIC SALINE INFUSION

B, CAPTAIN T C RUTHERFOORD, I M S,

Civil Surgeon, Bilaspur



Elevation of container or sterilizer

Sectional Elevation of the apparatus without sterilizer

A Mirror of Hospital Practice

A CASE OF SUB CONJUNCTIVAL CYSTI-CERCUS CELLULOSÆ

BY R H ELLIOT, M.D. (LOND.) ETC.,

MAJOR, I.M.S.,

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AND

A C INGRAM, M.D. (CANTAB.),

CAPTAIN,

Acting Professor of Pathology, Medical College, Madras

L Kondinguy, etc 24, male, French Eurasian, residing at Pondicherry Admitted to the G G Hospital, Madras, under Major Elliot on 21st November 1910 Disease Cysticercus Cellulosæ in Conjunctiva

History—About two years ago a piece of a broken glass tumbler struck him in the right eye This caused a wound on the lower part of the ocular conjunctiva which healed in about ten days His vision was in no way affected About six months ago, while he was washing his face with soap, he felt smarting on the inner surface of the lower lid On evertting it, he found a growth about the size of a pepper-coin, this has gradually increased to its present size

Present Condition—The growth can be seen through the lower lid as a distinct swelling which becomes decidedly more prominent when the patient looks upwards On evertting the right lower lid, there is an ovoid cyst-like swelling occupying the middle third of the lower part of the ocular conjunctiva The growth nearly approaches the fornix It is somewhat adherent to the over-lying conjunctiva, and moves fairly freely over the sclerotic The conjunctival vessels are prominent over the growth, which looks as if bound down by two folds of conjunctiva, one on the outer, and the other on the inner side The palpebral conjunctiva is congested, that over the growth is callous The cyst measures 11mm horizontally, 8mm vertically, and 4.5mm from before backwards The movements of the eyeball are quite free The growth is somewhat tender to the touch When the lower lid is everted, the cyst prevents it returning to its normal position again without assistance

Operation, 24th November 1910—The conjunctiva was divided below the cyst and was dissected off it working upward The adhesions were not very firm except over the middle of the surface of the cyst where the conjunctiva was button-holed in consequence during the dissection The attachments to the deeper parts were by a number of fibrous strands The inferior rectus muscle was free of the adhesions It was possible to remove the cyst entire, and it was placed at once in 5% formalin There was no suspicion before removal that the growth was parasitic

It was too opaque for its contents to be seen, and the clear history of injury left no doubt in our minds that we were dealing with a "traumatic implantation cyst"

2nd December 1910—Convalescence was uninterrupted The patient was carefully examined for evidence of other cysts of the same nature but with entirely negative results He was also treated with male fern and castor oil but passed no proglottides He denies that he ever had a tape-worm, but states that three years ago while he was serving in China, he had a servant who, frequently passed fragments of tape-worm He himself had ocular evidence of this The man was employed as an out-door servant, but probably came into the house and even into the kitchen at intervals

Pathological Report (by A C I)—The specimen received in 5% formalin on 24th November 1910 was found to consist of an almost perfectly oval white cyst 2/5 inch in length with a dense white opaque wall with some adhering tags of tissue The cyst was not very tense and its close resemblance to a cysticercus cellulosæ was at once recognised On holding up to the light it was just possible to see that it was faintly transparent except at one end where there was an opaque mass On opening the cyst a little clear fluid escaped and a complete embryo of a cysticercus appeared attached at one end to the wall of the cyst The embryo consisted of the usual two portions, namely, the transparent thin walled brownish bladder and the opaque white scolex By careful teasing of the scolex it was possible to separate and mount in glycerine the invaginated head, which passed 4 large suckers and 24 hooklets arranged in two rows of twelve, showing that it was a cysticercus of *tænia solium* Sections of the cyst wall showed it to consist of the usual dense laminated fibrous tissue lined by an irregular layer of embryonic cells The fibrous layers were more numerous and rather more cellular than those previously observed in sections of cysts from the heart and brain, probably this was the result of proliferation from mechanical irritation to which the cyst must necessarily have been subjected by its exposed position However, in all essential details the structure of the cyst wall precisely resembled the structure of the walls of cysts that have been examined from other parts of the body in Madras

Remarks—According to Parsons, "parasitic cysts of the conjunctiva are rare—cysticercus cellulosæ being commonest" He states that there are 55 on record, and that they constitute one-sixth of all cases of intra-ocular cysticercus, and he gives the literature of sub-conjunctival cysticercus to date (1904) (1) Since that time cases have been published by Terrien (2), Cosmetatos (3), Morton & Coats (4), in collaboration, and Ross (5), (*vide Bibliography*) Our case is, we believe, unique as being the first and the only

one of its kind ever published in India. Indeed *cysticercus cellulosæ* is a parasite very seldom met with in this country. We have been able to trace the following instances of its occurrence in other regions of the body in India.

At a meeting of the South Indian Branch of the British Medical Association on the 4th November 1887, Surgeon H. Armstrong⁽⁶⁾ read the *post-mortem* notes of a case of a criminal lunatic who had died in the Madras Asylum. Numerous cysts of *cysticercus cellulosæ* were found in the cerebrum, in the cerebellum, in the left ventricle of the heart, and on the right pleuron. He remarked on the rarity of the condition in Southern India.

In 1906, Major C. L. Williams⁽⁷⁾, I.M.S., recorded the occurrence of *cysticercus cellulosæ* in the tongue of a convict in the Coimbatore Jail. The man was a pork-eater and kept dogs in his house. Major Williams at the same time stated that in September 1905 he met with *cysticercus cellulosæ* in the brain of a prisoner who died in the jail. The man was a Kuravan who ate pork, rats, entrails, etc. There were plenty of dogs about his house.

The Indian Medical Gazette for November 1870⁽⁸⁾ contained details as to the frequency of *taenia solium* in country-fed pigs killed in Calcutta. Attention was at the same time drawn to the commonness of the *cysticercus* in the Punjab. The whole article was an appeal for the closer inspection of meat in India and for the close supervision of domestic animals.

One of us (A. C. I.) performed a *post-mortem* in Madras on a case of multiple *cysticercus* on 27th February 1910. In this case hitherto unpublished there were very numerous cysts in the brain and muscles, two in the heart tissue, several beneath the various serous membranes, and one in the cheek. There were none in either of the eyes. The patient was a Hindu male, aged 50 years, a vegetable seller residing at Park Town, Madras. He was seen while living, and was admitted to the Government General Hospital, Madras, on 2nd February 1910, for hemiplegia with late contractures of the right knee, elbow, and fingers of the right hand. Full particulars as to the habits and mode of living were not obtained, as the presence of *cysticerci* was not diagnosed during life.

The history of an injury in our own case is of interest. Leuckhart states that the infection is usually conveyed to those who are residing with the person infected with the adult worm. The patient had a servant so affected in China, but the association was not intimate and occurred three years ago. The length of the intervening period militates against the possibility of this source of infection. Moreover, though we examined the patient very carefully, we could find no evidence of any other cysts. We have consequently been led to consider the possibility of the infection having been conveyed by water adhering to the glass at the time of the accident.

If the infection were conveyed in this manner, it is obvious that the ovum only of the parasite could have been introduced. In favour of this hypothesis we may quote Parsons' statement that Sgirosso⁽⁹⁾ inoculated the parasite into the rabbit's orbit and obtained similar results "to those found in clinical *cysticercus* in man. We have not had access to the original reference but it would seem clear that Sgirosso must have used ova for the inoculation. If so, it does not appear to us too far fetched to imagine that our case may have been one of accidental inoculation on similar lines. Another possibility which occurs to us is that the ovum had lain dormant, possibly very small, in the sub-conjunctival tissue and had been able to take on an increased rate of growth after the tissue resistance had been lowered by local injury.

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MULTIPLE CYSTICERCUS CELLULOSÆ OF THE BRAIN

By T. S. TIRUMURTI, M.R.C.P.
Medical College, Madras

THERE have been very few cases recorded in India of infection with *cysticercus cellulosæ* in man, though it is not so rare as it is commonly thought to be. A case of *cysticercus cellulosæ* of the brain in a native cooly, aged 33 years, sent to the Madras Asylum as a criminal lunatic from Nellore Jail, has been recorded by Surgeon H. Armstrong in the *Indian Medical Gazette* for August 1888. Major C. L. Williams, M.D., I.M.S., records a case of a solitary cerebral *cysticercus* with no head symptoms in a patient, aged 45 years, who died of pneumonia in the Coimbatore Jail, and as regards the situation a very interesting one of *cysticercus cellulosæ* of the tongue in a convict in the Madras Jail in the June number of the *Indian Medical Gazette* for 1906. These are the only three cases recorded in India of infection with *cysticerci*. So the following case will be of great interest to many.

Patient's name, Venkata Reddy, age 50 years, male, Hindu. He was admitted on 2nd February 1910, under the care of the Second Physician, Major Donovan, M.D., I.M.S., Madras General Hospital. His residence was Park Town and his occupation was a vegetable seller. He died on 26th February 1910, and the *post-mortem* examination was conducted on the 27th by Captain A. C. Ingram, M.D., I.M.S., and myself.

History of the case.—The patient was admitted with a history of sudden paralysis of

the right arm and right leg of seven months' duration. The disease was diagnosed as hemiplegia with late contractures of the right knee, elbow and fingers of the right hand. He had in addition right-sided facial palsy and, as he was stupid and idiotic, also cerebral softening was suspected. Ten days after admission the patient became completely unconscious and a few days later, symptoms of meningitis—fever, throbbing back of the head, stiffness of the neck, muscles, etc., supervened. The examination of the blood revealed only polymorphonuclear leucocytosis. No increase of eosinophilic leucocytes was found. It is a pity that a fuller history was not obtained before the death of the patient, as it was thought to be only a common case of hemiplegia with late contractures, in which symptoms of meningitis supervened later on.

POST-MORTEM REPORT

In the cheek there was a small cystic tumour about the size of a grape.

The heart muscle was flabby, but the valves were normal. In the papillary muscle of the left ventricle one cyst was found about the size of a pea and larger cysts were present on the external surface of the left ventricle.

Neither cysts nor special pathological changes were seen in the lungs, spleen, liver and kidneys.

There were numerous cysts scattered throughout all the muscles of the body. One was attached to the diaphragm and one to the peritoneal surface close to the pubis. Scattered throughout the intercostal muscles between their external and internal surfaces were a large number of cysts. In the muscles they were elongated, one being $1\frac{1}{2}$ inches long and $\frac{1}{4}$ inch in breadth, tapering at both ends. Their surfaces were rounded but somewhat irregular. In the serous cavities and between the chest muscles, they were somewhat flattened oval about $\frac{1}{2}$ inch in breadth.

The brain weighed $2\frac{1}{4}$ lbs, the dura mater was thickened. Attached to its under surface over the right side of the cortex of the cerebrum, there was one cyst, throughout the hemispheres were dispersed numerous cysts, all situated immediately beneath or in the grey matter of the cortex. There was, however, one in the right lenticular nucleus. In the cerebrum about thirteen on each side were found. The surface of the right optic thalamus, the right external capsule and the white matter beneath the motor cortex of the left hemisphere had a cyst in each. On the surface of the cerebellum there was a single small one. The brain cysts were very irregular in shape, many presenting racemose appearances, rounded on surface and firm.

MACROSCOPICAL AND MICROSCOPICAL EXAMINATION OF THE CISTS

All of them were tense with thick semi-translucent very tough walls, on cutting through them a little slightly opalescent fluid

escaped and the embryo could be expressed with its thin, translucent and brownish bladder attached. These little brown bladders were not tense, though they also contained a very small quantity of a clear, colourless fluid. On evertting the sac on its inner wall was found a clear, tiny, pearly white and semi-opaque spot about the size of a pin's head. It was surrounded by a thin layer of a mucoid transparent substance and was disengaged from the wall of the bladder with a pair of needles. On gently teasing it on a glass slide in normal salt solution and mounting it, the head of a tape-worm resembling *Taenia Solium* was found with the transparent, homogeneous, and mucoid material devoid of cells. Then the opaque and tiny white head transferred with the point of the needle to a clean glass slide and mounted in glycerine and the cover glass was applied with thick Canada balsam. Thus were prepared the permanent specimens of the heads which still keep well. As only one head was found in each of these bladders, this belongs to the family of *Cysticerus* and not to that of *Cænurus*, in which each cyst contains a large number of heads. Evidently all the cysts are bladder worms, the cystic stage of some tape-worm.

The microscopical examination of them showed each to have four suckers and twenty-six hooklets. The rostellum consisted of two rows of thirteen hooklets in each. As it is the common *Taenia Solium*, which has four suckers and two rows of hooklets, this also was diagnosed to be the same. The cysts are, therefore, *cysticerus cellulosæ*, called '*cysticerus racemosus*' by Zenker, on account of the racemose appearances presented by them in the substance of the brain.

The microscopical appearance of sections of the cyst in the heart muscle was a thick, somewhat irregular laminated fibrous wall, situated in the cardiac muscle with internally a delicate irregular protoplasmic reticular layer containing a few nucleated cells, which was the bladder wall of the *cysticerus*. In the serial sections the suckers and rostellum of hooklets were identified.

I am very much indebted to Captain A. C. Ingiam, M.D., I.M.S., for the permission given me to publish the post-mortem findings of this case, and to Major C. Donovan, M.D., I.M.S., for having furnished me with the history of the patient.

THE INTRAVENOUS ADMINISTRATION OF SALVARSAN

By H. R. B. GIBSON,

LIEUTENANT, I.M.S.

THE administration of Salvarsan by intravenous injection is in itself a simple operation, but the amount of preparation necessary for the maintenance of strict asepsis without undue waste of time can only be learned by experience.

The purpose of this article is to give in detail what these precautions are, however elementary they may seem, and further to show that if these precautions are taken, no special apparatus is necessary, and the actual administration may be performed in any bungalow or private quarters as easily as in a hospital.

Besides preparing the ordinary instruments required for venesection, arrangements must be made for the simultaneous preparation of the solution.

The following will be found a simple and effective plan:

The instruments are boiled in a sterilizer, which may be the omnipresent kerosene tin. For the preparation of the solution there is boiled with the instruments—

2 Stoppered bottles of over 11 oz capacity
1 Graduated glass measure

1 Infusion apparatus *

1 Filter funnel

1 Glass rod

On one of the bottles graduations from 1 to 10 oz are scratched with a file.

Whilst the instruments are boiling, two pints of distilled water are boiled in a clean vessel and from this the normal saline solution prepared.

Whilst awaiting the water to boil the patient's arm may be prepared by washing first with soap and water, then with methylated spirits, and finally painted with a saturated solution of iodine in chloroform. The opportunity may now also be taken of arranging some stand for fixing the infusion apparatus about two and a half feet above the bed.

Instruments and salt solution now being ready, one ounce salt solution is poured into the graduated bottle. To this the Salvarsan powder is added very gradually, care being taken that the fluid is gently shaken after each addition till all is dissolved. A clear yellow solution results to which 20 drops of 15 per cent sodium hydride solution is added from a drop bottle. A pale yellow precipitate ensues, soluble on shaking—now 9½ oz salt solution are added to bring the volume to 300 c.c. or 10½ oz which contains 6 grammes Salvarsan.

This solution must now be tested for neutrality against litmus and sodium hydrate or hydrochloric acid added as required.

Finally, if necessary, the solution is filtered.

What remains of the salt solution is poured into the other sterilized bottle and both bottles are floated in a receptacle of almost boiling water to prevent cooling. A plentiful supply of boiling water may be obtained by the use of a "segree".

A particular vein having been selected, a local anaesthetic is injected round the part, and whilst waiting for complete anaesthesia the infusion apparatus is fixed in place, and boiling

water run through it to insure sterilization. When all the air bubbles are expelled, the rubber tube is clamped, and the canula allowed to rest in a vessel of boiled water or salt solution.

The vein is now exposed, the distal ligature applied, and the proximal ligature placed ready to tie.

The water in the infusion apparatus is now displaced by warm saline solution. The vein is incised and the canula slipped in, and tied in place.

The filler is now filled with Salvarsan and allowed to flow slowly in.

The maximum dose is 5 grammes or 8 oz 6 drachms Salvarsan solution, the instillation of which amount should take about 20 minutes. When the desired amount has been given before withdrawing the canula, about 1 ounce of pure saline should be poured into the filler so as to wash the Salvarsan out of the vein into the general circulation. The canula is now withdrawn, the proximal ligature tied, and the wound sewn up.

A few words of explanation and warning may now be given.

The somewhat elaborate precautions immediately before and after the actual instillation of the Salvarsan solution are most essential as (1) a single drop of the solution falling into the wound even though diluted will cause complete necrosis of the superficial tissues in spite of subsequent washing of the wound, (2) local inflammation, thrombosis and phlebitis can only be prevented by washing the Salvarsan out of the part into the general circulation with salt solution.

Preparation of Patient—The injection of such a large volume of an intensely potent solution direct into the circulation necessarily requires that the patient should be in the best possible state of health. The injection should be preceded by effective purgation on the previous day, and for 12 hours or more, before the operation no solid food should be taken. A few ounces of soup or other stimulant about 2 hours before the administration is advisable.

After-treatment—About half an hour after the administration there ensues a feeling of nausea often followed by a rigor, then by fever and vomiting. The temperature may rise as high as 103° the same day. The next day the temperature is lower and may be normal.

Vomiting is most persistent and speedily becomes bilious in type. Food cannot generally be tolerated for at least 24 hours.

The pulse becomes weak but not usually much accelerated.

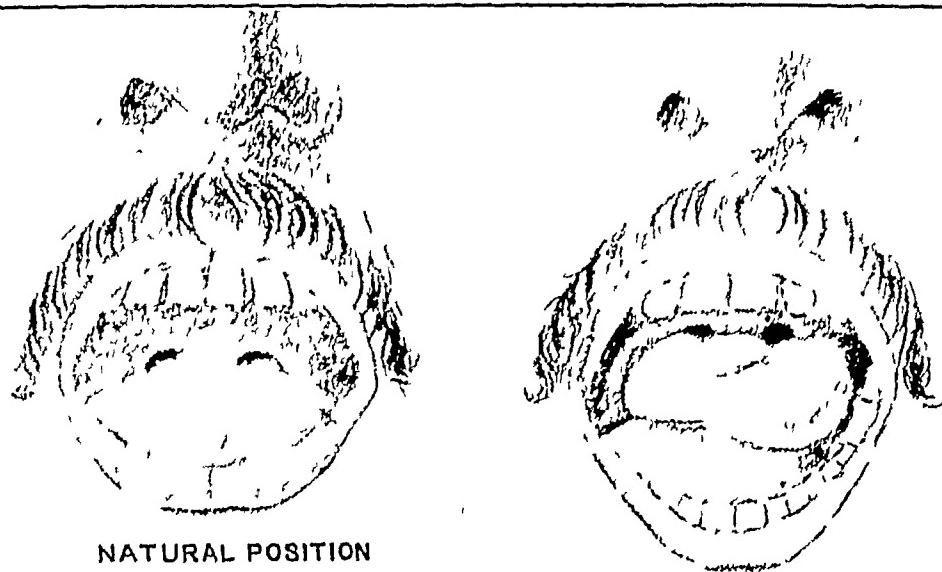
In all cases careful nursing and attention is necessary.

The principal constituent of Salvarsan is arsenic—arsenic is a cumulative poison for which great toleration can be acquired. Would a short course of arsenic previous to the injection be advisable or not to minimise the dangers?

* This can easily be manufactured with a filter funnel with a piece of rubber tubing and a piece of glass tubing bent and drawn over a spirit lamp.

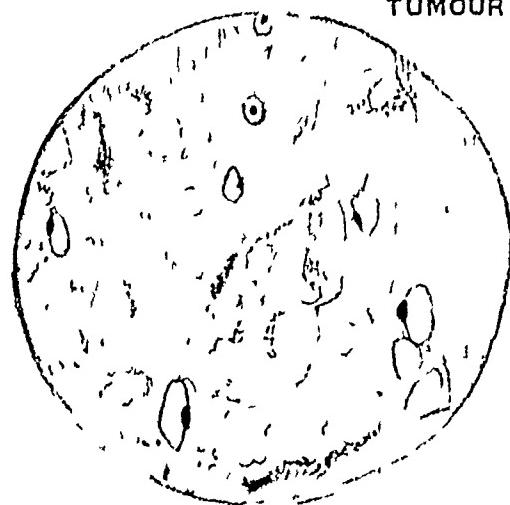
LIPOMA OF THE TONSIL.

By ASSISTANT SURGEON HASSAN SUHRAWARDY,
HOUSE SURGEON,
Medical College Hospital, Calcutta.



NATURAL POSITION

TUMOUR PUSHED UP



MICROSCOPIC VIEW



FRONT VIEW



BACK VIEW

The time has not yet come to give a definite opinion of the value of this drug. It has, so far as can at present be seen, a great future before it, and whether absolutely and immediately curative or not, it is certainly a great advance on the mercurial treatment.

My experience of Salvarsan for syphilis started on February 5th, 1911, when I gave my first injection. I have only used the intravenous method. My oldest case is therefore only two months old which is certainly insufficient time on which to state results. I may admit that I have nothing but good to say of all the cases. How long this happy state will last time alone can tell. Professor Ehrlich does not claim to have found a panacea for all ills, but seems well advanced on the road to such a discovery and with so definite a finger post to guide our future efforts the road to further discovery must be greatly simplified.

LIPO FIBROMA OF THE TONSIL

BY ASSISTANT SURGEON HASSAN SUHRAWARDY,
HOUSE SURGEON,

Medical College Hospital, Calcutta

E H J., European male, a widower, 50 years of age, by occupation a clerk, was admitted into the Medical College Hospital on the 11th of May 1909 for the treatment of "Pharyngeal Polypus". He gave a history of specific disease contracted many years ago. He looked a tuberculous subject, but affirmed that none of his people ever suffered from pulmonary affections. He complained that for over two years he had observed a swelling in the back of his mouth which went on increasing, and from a year previous to admission into hospital he felt it dropping into his throat. It caused a certain amount of discomfort to the patient in swallowing and gave his speech a guttural twang, he also slept with his mouth open.

2 On examination the tumour was found to be growing from the left tonsil and was pedunculated, pinkish gray in colour and bifurcated at the extremity with rounded ends. Under ordinary circumstances when the patient opened his mouth nothing could be seen except the thin peduncle which lay at the back of the left tonsil, the whole tumour lying hidden behind in the pharynx. A slight effort at coughing, however, made the growth come out *en masse* into the buccal cavity and it lay on the tongue. An effort at deglutition made it go back to its original abode. The patient was shown at a meeting of the Medical Section of the Asiatic Society on 9th of June 1909.

3 On the 12th June, the patient was operated on by Lieutenant-Colonel F. O'Kinealy, I.M.S. The left tonsil and surrounding parts were swabbed with a solution of 20 per cent of cocaine hydrochloride and 1 in 1,000 of adrenalin chloride. When anaesthesia was complete, Lieutenant-Colonel O'Kinealy removed, by means of

an Ericson, the whole growth together with a good part of the left tonsil to which the peduncle was attached and from which it grew. After removal the growth measured fully three inches in its longest diameter and more than two at its broadest part. It weighed about six ounces. There was not much bleeding and the patient was sent back to the ward and ordered liquid food for 48 hours and everything iced. He made an uninterrupted recovery, and the right tonsil which was also hypertrophied was removed by the guillotine on the 20th June 1909, and the patient discharged from the hospital three days later.

4 A microscopic section of the tumour showed it to be a Lipo-Fibroma—a rather unusual form of growth from the tonsil.

5 A diagram of this interesting tumour as seen under the microscope is annexed herewith, as also one showing the natural size and shape of the growth from the front, as well as from behind, and that of the view of the mouth with the tumour hidden behind in its natural position, and also when it is pushed up.

6 The College Artist, Babu B. L. Dass, drew coloured pictures from the original. They are preserved in the Pathological Museum of the College, where the tumour is also kept. The sketches for the blocks have been prepared for me by Babu Jitendra Narayan Roy of Murshidabad from the original coloured pictures of Babu B. L. Dass.

7 I am indebted to Lieutenant-Colonel F. O'Kinealy, I.M.S., whose Senior House Surgeon I had the honour to be, for kind permission to report the case.

OSTEOMALACIC PELVIS FULL-TERM PREGNANCY PORRO'S OPERATION

BY L. G. FISCHER,
LT COL, I.M.S.,

Civil Surgeon, Dehra Dun, U.P.

AZIZAN, a Mahomedan woman, aged 20 years, the wife of a Bhisti, was admitted into hospital on 20th December.

History—A full-term pregnancy. False labour pains commenced two days previously. She stated that she was married at the age of 10 years, but did not at that time live with her husband. She suffered from joint pains and fever at the age of 14, which troubled her for about three years.

Present state shows curvature of the spine at the level of the 5th lumbar vertebra and contracted pelvis.

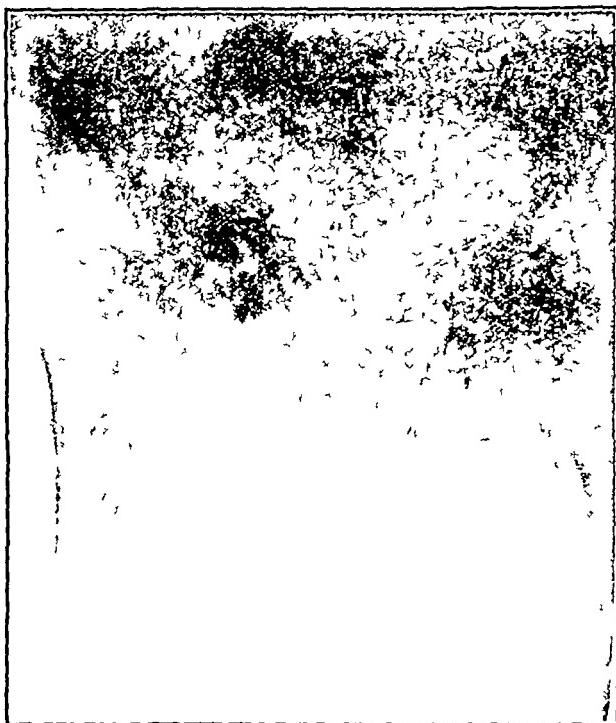
The external measurements of the pelvis are as follows—

Distance between	Ant Sup Iliac Spines	8'
" "	Trochanters	9"
" "	Ischiac Tuberosities	2"
" "	Lower Margin of Pubes and Coccyx	3½

A skiagram very kindly taken for me, after the patient had recovered, at the X-Ray Institute

here, shows the extreme contraction of the outlet, and a typical well-marked osteomalacic pelvis. The skiagram was not available before the operation, but the external measurements and the fact that two fingers could with difficulty be introduced into the vagina, owing to the extreme lateral contraction of the outlet, made it apparent that nothing short of Cæsarean section could save the life of mother and child. Porro's operation was decided on to prevent the possibility of further pregnancies, and was justified by the successful result, both to mother and child, and labour having commenced, it was decided to operate at once.

The patient having been very carefully prepared, the abdominal walls being sterilized by washing thoroughly with soap and water and afterwards with a solution of 1—500 perchloride of mercury, the vagina doused and washed



thoroughly with carbolic lotion 1—50, and the bladder and lower bowel emptied, I performed Porro's operation. Nothing further need be said than that the child was extracted alive and healthy, the patient stood the operation well, and the abdominal wound and stump subsequently healed without the formation of a sinus and absolutely without suppuration. Three weeks after the operation the mother started to suckle her child, which she still continues to do, the flow of milk being ample. A photograph was recently taken, and shows her and her child both in the best of health, and the husband appears content with his wife.

Since writing the above account I have performed two more Porro's operations in osteomalacic pelvis. In one case, the wife of a Khidmatgar, the patient came in good time to

hospital, and a completely successful result was secured, but no milk appeared in the breasts. In the other, labour had commenced at least 12 hours previously, when the woman was brought to hospital, the child was dead and the operation had to be performed in a hurry by lamplight. The woman in this case died a week afterwards of septicaemia. These three cases show the great importance of being able to secure the best time for operation.

A CASE OF RUPTURE OF UTERUS IN AN OLD CÆSAREAN SECTION SCAR

BY A G COULLIE,

CAPT., I.M.S.

[Reported by S Rangachary, M.B.]

THE patient, 4th para, a Mahomedan female, age 29 years, was admitted into hospital on the night of 12th December 1910.

Previous history

1st confinement 1906 Premature labour, dead child

2nd confinement Patient was admitted into the civil hospital on 2nd December 1907, vertex presentation, membranes ruptured, forceps failed, contracted pelvis diagnosed. Cæsarean section was done and a live child extracted.

3rd confinement Patient was admitted in the civil hospital on the morning of 17th February 1909, said to have been in labour for 12 hours. Vertex presenting, membranes ruptured, head not fixed. Podalic version was done. There was a little delay in the extraction of the head and the child was still born.

On admission for her 4th confinement Patient walked into the ward, said to have been in labour for four hours. Pulse very quick, no labour pains.

Abdominal examination—No uterine contractions felt, limbs of foetus felt very superficial, abdomen tender.

P.V.—Cervix thick, admits three fingers, head felt very high up, a red discharge present.

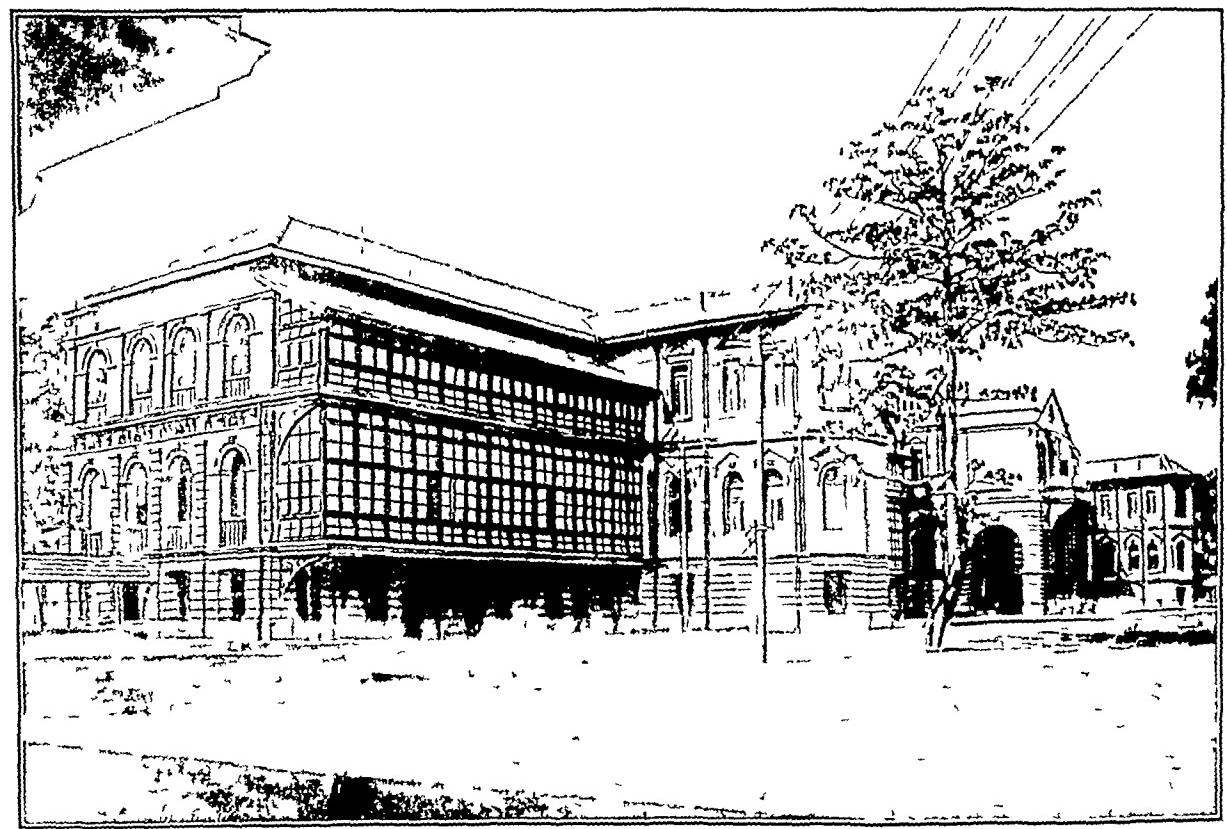
Diagnosis—Rupture of uterus

Treatment—Laparotomy done at once, a large quantity of blood and clots escaped out of abdominal cavity. There was a median longitudinal rupture of the uterus along the scar of the old Cæsarean section. The child and placenta were lying free in the peritoneal cavity which was full of blood.

Porro's operation done—Patient did not recover from the shock and died shortly after the operation.

The case is of interest as Cæsarean section had been performed for the second confinement. The third confinement had passed off without mishap to the patient, and the fourth labour had resulted in rupture of the old cicatrix in the uterus after patient had been in labour for only a few hours. This case points to the advisability of dividing the Fallopian tubes between ligatures whenever Cæsarean section is performed.

THE NEW GENERAL HOSPITAL, RANGOON



Indian Medical Gazette

JUNE

THE INDIAN MILITARY FAMILY PENSION FUND

THE attention of our I M S leaders is directed to the notification dated Simla, 7th April 1911, published in the *Gazette of India*, for April 8th, 1911. In these columns (I M G, Nov 1907, p 421) we commented upon the last notification on this subject and pointed out how little value men who are forced to subscribe to this fund really get for their families.

It was then discovered that on a 4½ per cent basis of valuation the subscribers had subscribed nearly a quarter of a million pounds sterling more than had proved to be necessary up to 31st March 1903. The present Notification gives the quinquennial valuation up to 31st March 1908 of the assets and liabilities of the Fund, but though the basis of valuation is reduced to 4 per cent yet it is calculated that the surplus is £564,509 sterling. We may quote the words of Mr Hardy, the actuary:

"The Valuation Balance Sheet appended to this Report shows in detail the results of the valuation upon the assumption that the full rates of contributions and donations as set out in Regulation 12 are payable in future. It will be seen that there was, on 31st March 1908, a surplus according to the present valuation of £564,509."

This surplus is not quite sufficient to warrant the continuance of the reductions of 25 per cent at present in force, but will permit of reduction of 20 per cent on all future contributions and donations, and such reduction may safely be allowed until the completion of the next valuation."

This means that the reductions made in September 1907 are not to be continued, but our monthly subscriptions are increased, from 1st May 1911.

In September 1907 the subscriptions were reduced by one-fourth or 25 per cent. Now the old rate of subscription previous to Sept 1907 is only to be reduced till further orders by 20 per cent or one-fifth only, e.g., a Lt-Colonel, married, formerly paid £3-16-8 per month, in September 1907, this was reduced to £2-17-6, from st

May 1911 this rate will be increased to £3-1-4, or say 46 rupees instead of 43.

As we said before (*Loc cit* Nov 1907) Officers do not complain of the amount of the subscription, they would gladly pay more if they got full actuarial or insurance value for their money. Unfortunately from the beginning Government refused to treat this fund as an insurance and it has not been managed on insurance or business-like principles. Government simply takes in all the subscriptions and pays out all liabilities, which may be magnificent, but it is not finance. *Plectuntur Achivi*

Current Topics.

THE NEW GENERAL HOSPITAL, RANGOON

We have to record the opening of another fine up-to-date hospital, this time the General Hospital, Rangoon.

Twenty years ago the inadequacy of the old hospital was recognised and the question of rebuilding was mooted, but the matter was not seriously taken up till 1902, and the final plans and estimates were passed in 1904 and work commenced in 1905.

The main building consists of 26 buildings of which the more important are the Main building, the Paying Patients' Block, the Main Kitchen, the Observation Wards, the Special Ward, Out-patients' Department, the Nurses' Home, the Laundry, the Power Station and the Mortuary.

The site has an area of 23½ acres.

The main building, which is three-storied throughout, consists of four blocks connected by passages and is 700 feet long. Between the first floor and ground level is a basement which is used as an ambulatory, X-ray, electro-therapeutic rooms, storage and office rooms. In the central block is the main staircase and passenger lift with administrative offices, casualty reception rooms, male and female, and emergent dispensary on the first floor, and operation, anaesthetic, sterilizing, instrument, recovery and robing rooms on the second and third floors.

The east and west wings each contain one ward of 22 beds, one ward of 18 beds on each of the three floors, and a central block which includes food-lifts, ward kitchen with electrical heaters, the necessary accommodation for the medical and nursing staff, and wards for special cases. The lavatory accommodation is provided in annexes separated from the main building by short, cross-ventilated passages. Staircases are provided at each end of the building and in the turrets in the corners of the east and west wings.

The principal operation room is on the second floor over the portico and is lighted by one window on the north which occupies nearly the whole wall. The floor and dados are of marble terrazzo, all corners are curved to prevent the lodgment of dust. A students' gallery is provided, with a separate entrance, a plate glass screen separating the gallery from the operation room. All sterilizing is done by steam under pressure conducted from the central power station to the main sterilizing room on the second floor, two subsidiary sterilizing rooms are attached to each operation room.

Ventilation of the operation rooms is provided for by the plenum and exhaust system, the air being completely changed three times an hour with fresh filtered air drawn from above the top of the building. To prevent the possibility of electric light failing during an operation at night, the light can be switched on from three independent sources.

On the second floor is a similar operation room without a students' gallery.

The wards are 15 feet high and are amply provided with through ventilation. The European wards are provided with electrically operated punkahs, each of which can be detached at will, the punkah fans are removable for cleansing and sterilizing when necessary. The floor area per bed is about ninety-six square feet and the cubical capacity per patient about one thousand and four hundred and fifty cubic feet.

The main building has accommodation normally for 360 beds and this can be increased if need be to 396 beds.

The Paying Patients' Block is a complete hospital in itself, double-storied and well raised off the ground. It has accommodation for 28 patients in private rooms measuring 24' x 17' (408 sq feet). There is a separate operating room and food and passenger lifts are provided.

The Hospital Main Kitchen is very good and is provided with refrigerating plant and a cold storage room.

There are five single-bedded Observation wards for cases suspected of being infectious.

Three circular wards (with, in all, 50 beds) are quaintly designated the "Special Nursing Block", they are for pauper patients who so often come to hospital in a moribund condition.

The Steam Laundry is equipped with all modern apparatus, 3,000 articles per day can be washed.

The Out-patients' Department is a single-storied building with the usual waiting and consulting rooms, an ophthalmic examination room and two small operating rooms for minor surgery. The Nurses' Home provides accommodation for Matron, Nursing Sisters and Nurses.

The Power Station is very complete, electricity is supplied all over the hospital. There are 6 miles of steam and hot water pipes, 14 miles of electrical conduit and 64 miles of wiring laid down in the various buildings.

The sanitation is on the "Shone and Ault" town drainage system and the fittings of the most modern type.

The completed hospital has normally accommodation for 443 beds (which can be increased to 480) and cost Rs 40,72,000 or £560 per bed.

The new General Hospital, Rangoon, can claim to be one of the finest in the East, and we congratulate the people of Rangoon and the medical officers of the Hospital on their splendid Hospital.

The following speech was made by Sir Harvey Adamson, the Lieutenant-Governor of Burma.—

"I will now turn from the hospital itself which you will have an opportunity of inspecting for yourselves and say a few words regarding the designers and builders. Under the direction of the then Chief Engineer, now Sir Lionel Jacob, and in consultation with Colonel Benson, Inspector General of Civil Hospitals and later on with Colonel Macrae, Inspector General of Civil Hospitals, and Colonel Davis, Civil Surgeon and Superintendent of the Old General Hospital, Mr Hoyne Fox designed the new General Hospital. In his double capacity of architect and superintending engineer, Mr Fox held superintending charge of the works and erected the greater part of the buildings. Early in 1909 he retired and I am glad of the present opportunity of paying a tribute, under the shadow of the noble building which he designed, to the talent of the architect who designed and built not only this hospital but the new public offices, Government House and the Chief Court, a quartette of noble edifices of which Rangoon is and will for long be justly proud. Though with the departure of the Superintending Engineer Architect early in 1909 the mass of the buildings was completed, a very large amount of work remained to be done in the entire design and erection of the power house, the redesign of the central heating system, the creation of lifts and machinery and a vast amount of what is known as finishing work. This fell to the lot of Mr Russell Superintending Engineer, Rangoon Division, and it is through his ability, foresight and resourcefulness that the work has been completed without hindrance or avoidable delay and with a saving on the sanctioned estimate. I cordially acknowledge the excellent work of the executive, electrical and assistant engineers and the subordinate staff whom the Chief Engineer has already named. And last but not least I have much pleasure in acknowledging the debt that we owe to the Chief Engineer, Mr White, whose constant and unwavering supervision has given the impulse that carried the work to completion and whose admirable address has given us much pleasure and instruction to day. I should not forget to add that to the genius of Colonel King, who was Inspector General of Civil Hospitals from 1905 to 1910, and to his wide and accurate knowledge of the requirements of modern sanitary science, we owe the bulk of the improvements that have been introduced into the original design during the progress of the work. To Colonel Carruthers, our present Inspector General of Civil Hospitals, and to Major Barry we are deeply indebted for their valuable and sagacious assistance in the latter stages of the work. And now, ladies and gentlemen, I will detain you no longer, but will invite you to view for yourselves the Rangoon General Hospital. I am certain that you will find within it much that is wonderful and admirable. I have much pleasure in declaring the new General Hospital to be open."

FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE

The Second Biennial Congress of this Association will be held in Hongkong from Saturday, January 20th, to Saturday, January 27th, 1912,

and all medical men are cordially invited to attend and to take part in the work of the Congress. The Association is an international one, formed to promote the science and art of Tropical Medicine in the Far East.

The fortnightly French mail steamer from Ceylon, Singapore and Saigon is due to arrive in Hongkong on Tuesday or Wednesday, January 16th or 17th, and the fortnightly English (P & O) mail steamer from Ceylon, Penang and Singapore is due to arrive on Friday, January 19th, while there are several mail steamers arriving in Hongkong each week from the North.

Saturday, January 20th, will be devoted to the reception of official delegates and visitors, leaving the whole of the following week for the scientific work of the Congress.

A Scientific Committee has been appointed consisting of —

Col W G Bedford, CMG, MB, P M O,
Chairman

Deputy Inspector-General J L Barrington,
RN

Charles Forsyth, MD, FRCS (Edin)

Oskar Mallei, MD (Munich)

F Osmund Stedman, MD (Lond)

to classify the papers which are offered, so as to give, as far as possible, a day to each of the following groups of subjects —

Protozoology—Helminthology

Cholera—Plague—Leprosy—Tuberculosis

Tropical Fevers including Malaria—Berlin—Dysentery

Surgery—Obstetrics—Infantile Diseases

Climate—Hygiene—Sanitation

It is requested that a brief abstract of each paper be forwarded to Dr F Clarke, Hongkong, as soon as convenient, for the information and guidance of this Committee. Papers may be read in either English, French or German, but authors are asked to send their abstracts in English in all cases.

The subscription to the Association is 10/6 (\$6 Hongkong currency) and is due now (1911), but no further subscription will be required until 1913.

A suitable social programme will be arranged for the entertainment of visitors during the Congress.

The average temperature in Hongkong during the month of January is about 62° F (17° C) while its range may extend from 80° F (27° C) on a warm day to 40° F (4.4° C) during a cold night, so that visitors from more tropical regions should provide themselves with warm clothing.

The President is Dr J Mitford Atkinson, MB, DPH, and nine Vice-Presidents have been appointed to represent the Straits, Siam, Japan, Java, Shanghai, Tsingtao, the Philippines, Ceylon and French Indo-China. It is to be hoped that the Government of India will send several representatives.

ACCELERATED PROMOTION IN THE I M S

We have already referred to the following notification which will be found very acceptable to the service, and will remove an admitted difficulty —

"No 282—With the approval of the Right Hon'ble the Secretary of State for India, the Governor General in Council is pleased to notify, with reference to the late Military Department Notification No 139 of the 17th February 1905, that an officer of the Indian Medical Service who cannot, on grounds of public conveniences, be granted study leave in time to qualify himself while in the rank of Captain for accelerated promotion, shall have the concession of accelerated promotion open to him for a period of four years after his promotion to the rank of Major in the ordinary course. If at any time within these four years he qualifies for accelerated promotion, by producing satisfactory evidence of progress in knowledge under the terms of the notification above referred to, his promotion will be antedated and his position in the Army List adjusted accordingly, but he will have no claim to any arrears of pay at the enhanced rate."

THE PARADOXES OF SIR ALMROTH WRIGHT.

Many of us have been reading Bernard Shaw's "The Doctor's Dilemma," and those of us who have not should certainly read it. As usual with Bernard Shaw it is the preface and not the play that follows which matters. It contains a very clever and severe attack on the medical profession, not without clear views as to what should be and shall be.

We are not, however, concerned with Bernard Shaw's views, but it is well known that Sir Almroth Wright is caricatured in the play* under the name of Sir Colenso Ridgeon and that he has been reading the mass of paradoxes contained in that clever play and still more clever preface is, we think, clear from the following abstract from a recent lecture of his. It is in the most "Bernard Shawian" vein, and the public will pay about as much attention to the paradoxes of the one as they do to those of the other. We take this abstract from the *Medical Officer* —

"Sir Almroth Wright, FRS, last week delivered the second of the Lady Priestley memorial lectures, under the auspices of the National Health Society. The subject of his lecture was "Bacteriology and Health," and he appears to have set out with the intention of shocking the more orthodox amongst his audience, and he succeeded in amusing everybody.

He first referred to his experiences on the Plague Commission in India. He recommended there all sorts of sterilization of floors, but that, although it cost a lot, did no good, the fleas came hopping along, and did not care whether the floors were disinfected or not. He felt the wisdom of the man who said that if any member of the Commission was in favour of doing nothing he was on his side. There was large talk about catching rats, but he did not know that it was any use. Certain diseases, like tuberculosis, spread inside the house and in schools. He did not know whether measles was infective in the early stages, and our present methods of dealing with epidemics were futile, the epidemics were

* Sir Patrick—"Opsonin? What the devil is Opsonin?"
Ridgeon—"Opsonin is what you butter the disease germs with to make you white corpuscles eat them!"

as bad as sixty years ago. There was a widespread belief that if you had not got any disease you could keep it away by following certain rules, and that if you had a disease you could make it better by following them. That was a religion he had no sympathy with. People said you must have hard exercise, a certain amount of washing, and a certain amount of fresh air. He was persuaded that these rules were quite wrong. He did not say they did not conduce to the amenities or pleasures of life, but there was no evidence that a man who took physical exercise was the less liable to disease. In the future man would be an intellectual machine on a tripod. It was believed that when a man washed he washed off microbes. It was much better to be dirty than infected. They did take off a certain number of microbes, but they did harm as well. No microbes could get through a horny skin. If they went to a Turkish bath they were first stewed and then had their skin rubbed and deprived of those outer protections. Nobody had more microbes than the person coming out of a Turkish bath.

Sir Almroth continued that the religion of fresh air had got all sorts of dangerous sides to it. He held the fresh air treatment for consumption to be a dreadful superstition. At the London Hospital not long ago certain men were put in a glass cage. Finally the air became very hot, and the men became very sleepy. Then the doctor, by a turbine arrangement, without letting in a drop of fresh air, stirred the vitiated air up, and the men became lively again. The whole of the doctrine of fresh air required revision. It was awkward to be in a crowded house because it got hot, but that upon these effects a whole theory should be built up and large amounts spent on fresh air was deplorable. He did not feel that with regard to public hygiene, domestic hygiene, or private hygiene we had reached any valuable knowledge, and if we never applied that which we had we should not be much worse. Epidemic diseases were but incidents, and did not matter much, the permanent disabilities were local infections. Very few people had yet appreciated that the non-infective diseases were due to microbes. Hygiene was a question of fighting microbes. It was said that prevention was better than cure. He did not believe it. As Krüger said, let them wait till the tortoise puts its head out and then kill it. The programme had been to kill the microbe outside the body. That was very difficult to do. Against that they had the policy of killing the microbe inside the body, and that could be done if they would take the trouble to study it. The body had protective and destructive substances, and these could be enlisted in the fight. Research was necessary. It was no good filling hospitals with people they did not know how to treat. He had seen twenty one doctors round a rich man's bed, and not one of them knew anything about him."

THE MARMOT & PLAGUE

The following account of the conveyance of plague infection by the marmot is taken from an American Consular report from Haibin —

"Pneumonic plague appears to be practically endemic over those portions of eastern Mongolia in which the marmot flourishes. It is said the Chinese in the past would not trap the marmot for superstitious reasons. The animal lives in colonies of from 30 to 50. It has the same habits of precaution on leaving its burrow as has the prairie dog. The Chinese say that when the animal is about to leave its burrow and notes some suspicious circumstance it emits a sound like "pu p'ab, pu p'ab" (no fear, no fear), and then returns to the depths of its habitation. The Chinese also say when the animal is trapped and

still alive and the hunter approaches with a club to kill it, the same note is emitted. It was this which led the Chinese in the past to have nothing to do with the animal. Then superstitious fears have been overcome within the past two years by the high price of marmot skins, the large numbers of the animals, and the ease with which they are trapped. Two years ago the total number of Chinese trappers was about 300, last year there were between 2,000 and 3,000, while in the present year there are over 10,000 trappers who find the occupation profitable. The expert trapper can secure from 20 to 30 skins per day.

The marmot is subject to pneumonic plague, which kills off entire colonies of these animals. The disease is probably propagated by the fleas which these animals always carry, and perhaps also by direct infection, as in the case of a trapper who captures an animal suffering from it.

The number of trappers is so great this year that they have adopted the practice of bringing the skins to Harbin, and probably other central points, in person instead of selling to the buyers in the region where the animals are trapped. These men undoubtedly brought the pneumonic plague to Harbin, where the present epidemic started. Again, large numbers of these Chinese follow the universal custom of going to their homes at the Chinese New Year. Some of these men became infected, and the disease broke out while they were on their way southward. Many of those residing in Shantung went to Dairen, and thence by steamer to Chefoo, infecting both places. Others came down the railway line through Hankow to Tientsin and Peking, carrying the plague to the two latter places. At Tientsin those residing in the western part of the province of Shantung took the Pukow railway to their homes, carrying the disease with them.

THE KASHMIR MISSION HOSPITAL REPORT

This well-known hospital has published its annual report.

It has a well deserved reputation for good surgery. We observe that in 1910 there were 110 operations for cataract, 40 for midectomy, 567 for entropion and trichiasis, in a total of 1,162 eye operations. The ear operations numbered 157, throat 95, injuries 208, tumours 293 of which 75 were epithelioma, 2 carcinoma, 19 sarcoma, 3 ovariotomies. Stone operations numbered 17, of which 10 were litholapaxy, 2 lithotomy and 5 urethral calculi. The bone operations were 275, there were 65 operations on joints, 36 amputations and 280 "miscellaneous," which included 25 hernias, 23 laparotomies, 4 for appendicitis, 15 radical cures of hydrocele, and 12 nerve stretchings, or a total of 2,807 major operations, with 17 deaths, 15 not improved and 9 "left hospital."

Dr Neve comments as follows —

Step by step the buildings have been erected, and the staff strengthened, and although the State Medical

Department has also expanded considerably of late years, and there are small dispensaries in most of the little townships, and in some of the larger villages yet our work continues to grow.

The equipment too is improving from year to year as the finances permit. During 1910, a new operating room was finished and brought into use. It has been well fitted with all aseptic appliances, and is thoroughly up to date in all respects. So that there are now three operating rooms, the other two being for septic major cases, and for minor operations. Occasionally all three are in use at once, as on some days last April when over seventy operations were performed in two days. For such a rush of work, and with several hundred out patients to be seen daily, a really strong staff is necessary. And it has to be remembered that there is a considerable amount of private practice for eight or nine months of the year, and indeed without the money so earned the Hospital would not pay its way.

SURGICAL NOTES

A distinctly large proportion of our operation cases are in an already septic condition, such as injuries, bone disease, and epitheliomas. Add to this the personal filth and unsavoury garments of the patients, and the need for vigorous antisepsis will be perceived. For such there are separate operation rooms, keeping the new aseptic theatre 'holy' (in the ancient sense) for clean cases. The iodine method of skin antisepsis has been a great reinforcement to other precautions during the past two years.

By its means and by careful exclusion of infected areas with sterilised towels, in several cases of gangrene of a limb we have obtained primary aseptic union of amputations performed within a few inches of the line of demarcation.

In some cases of gangrene we have for many years successfully *conserved important joints* (knee or elbow) rather close to the infected area, by separating the limb through the dead tissue, combating vigorously the local sepsis in the stump, and finally resecting whatever bone is excessive and grafting the raw surface. In a similar way most useful stumps may be retained of half the foot, when the only alternative would have been removal at the ankle.

Conservative surgery of the mastoid—We seldom resort to the complete radical operation in mastoid and middle ear suppuration. In acute cases simple antral drainage appears sufficient in most, in more chronic ones, we chisel and gouge carefully in a way resembling Chas. Heath's method.

Webbed arms and axillæ are common owing to extensive burns. In many such cases it is better not to apply my stitches, which are sure to ulcerate but to apply large Thiersch grafts to fill the gap. If there is no oozing of blood, such grafts do best when protected by a wire cage, but otherwise exposed to the air. It may be necessary to stitch a thin dry protective layer of guaze to the neighbouring skin to prevent displacement of the graft in young children.

Intussusception—Among other interesting cases of this kind was one in an elderly man involving the ileum, caecum, and ascending colon. After reduction, we did appendicotomy and cecopexy. He made an uninterrupted recovery, and came to show himself months afterwards. We almost failed to recognize a healthy looking young man as the case on whom gastrojejunostomy was performed a year previously, when he was almost a skeleton. Another successful case was performed last year, but the indications for doing it are rare in Kashmir, for though we admit many patients with dilated stomachs to our wards, nearly all improve rapidly with appropriate medical treatment.

Treatment of Cholera—At the outset we give a single hypodermic injection of about $\frac{1}{4}$ grain of morphia which usually stops the vomiting and decreases the evacuations. After this we are careful not to press opium as it is apt not to be excreted and so may assist in producing collapse and uræmia.

Sulphuric acid and other astringents appear to have some value in this stage, and spirits of nitrous ether with other stimulants are useful in the next stage. Our experience of saline transfusion (intravenous and hypertonic) was confined to a few cases in collapse, and was disappointing. If used extensively to prevent collapse, it might have saved one or two lives, but in many other cases which recovered, its reputation would have been undeserved.

In two young English officers it was employed at the earliest opportunity but in vain.

IPECACUANHA IN DYSENTERY

THE following extracts are taken from a report by Capt E. B. Vedder, Medical Corps, U.S. Army, published in *Bulletin* of the Manila Medical Society (March 1911).

In India we do not need to be reminded of the value of Ipecacuanha in amoebic dysentery, though the saline treatment has been now long in vogue for bacillary dysentery. It is worth noting that some twenty years ago there was much use made of *de-emeticized ipecac*, as it was thought to be better on account of its being less disturbing to the stomach, these researches, however, show that the emetin is a powerful amoebicide and most useful in amoebic forms of dysentery —

Capt Vedder concludes —

1. The ipecac is a powerful amoebicide since the weakest preparation used (with the exception of the de-emeticized) killed in a dilution of 1—10,000.

2. Different preparations of ipecac on the market vary greatly in their ingredients and in the power of killing amoebæ.

3. Emetin is a powerful amoebicide, killing amoebæ in dilutions of 1—100,000 which is double the dilution that was amoebicidal when fluid extract of ipecac was used.

It is probable that the power of any given specimen of ipecac to kill amoeba is directly dependent upon the proportion of emetin contained, though we cannot prove this at present owing to the fact that there is another alkaloid, cephaelin, in ipecac. It seems probable that cephaelin may be lacking in amoebacidal properties for the following reasons. If cephaelin were at all active, it would be possible to judge the amoebacidal properties of a preparation by estimating the total alkaloidal content. This, however, does not appear to be the case, since the ipecac No. 2 with total alkaloidal content of 0.33% appears to be fully as powerful as ipecac No. 1 containing 1.8% total alkaloids. It has also been noted as a clinical fact that the ipecacuanha root from Brazil gives the best results in the treatment of dysentery, and Paul and Cownley found that Rio and Cirthigena ipecacs do not differ materially in total alkaloids, but that in the Brazilian root emetin is the dominant alkaloid, while in the Columbian root cephaelin predominates, and that the roots are not therapeutically identical. Since we have shown that emetin is an exceedingly active amoebicide, it is probable that this large emetin content is the reason for the greater excellence of the Brazil root, and that cephaelin is comparatively inert. It is not believed that the action of ipecac is due to other less active components such as resins, gums or ipecacuanha acid, since these elements were present in the ipecac *sine emetin* (No. 3) tested which was almost inert, and the action must be more or less specific to ipecac since the fluid extracts of such drugs as opium, ergot and hydrastis fail altogether to kill amoebæ in dilutions of 1—2,000.

A few experiments similar to the one described have been performed with quinine sulphate and silver nitrate, and it has been found that quinine in a dilution of 1—20,000 killed amoebae, but failed in higher dilutions, while silver nitrate was the most powerful of any drug tried since it killed amoebae in dilutions of 1—300,000. But although ipecac is not so powerful an amoebicide as silver nitrate, it may possibly give better results in actual treatment because in irrigations silver nitrate loses most of its strength since it unites with the albuminous matters and salt in the faeces and tissues, leaving very little to attack the amoebae high up in the colon, and because of the proverbial difficulty in reaching all portions of the colon with an irrigation. On the other hand, a large bolus of ipecac given by mouth goes into solution slowly, since it is sparingly soluble in water, and its action may be continuous throughout the entire intestinal tract, and it probably succeeds in reaching all parts of the colon.

Again, while it may be difficult for the ipecac in the intestine to act directly upon amoebae that have burrowed deeply into the tissues, the emetin may act on these organisms after it has been absorbed into the blood stream. That emetin is absorbed seems undoubtedly true because both Wood and Hare state that the vomiting resulting from the administration of ipecac is at least partially produced by action upon the vomiting centers in the brain. They also state that ipecac is partially eliminated by the gastro-intestinal tract. Wood says "it has been proved by D'Ornellas and Pecholier that when emetin is introduced into the circulation or even into the cellular tissue, it escapes with the secretions of the stomach and bowels, so that the changes which are provoked in these organs are evidently connected with the elimination of the drug."

It is therefore quite possible that the emetin in solution in the body fluids may be capable of killing or inhibiting amoebae deep in the tissues, especially during the elimination of the drug through the intestinal mucosa which would cause it to come in intimate contact with amoebae in the deep ulcers characteristic of amoebic dysentery. While in solution in the blood it may even be capable of killing amoebae in the liver, which would explain the good results reported by L. Rogers in the treatment of hepatitis and early liver abscesses caused by amoebae.

It is well known that the *Balantidium coli* is the cause of one form of dysentery. Recently Duncan reported a case of balantidium dysentery treated by ipecac with prompt recovery. The action of ipecac upon a species of paramoecium and also a balantidium isolated from tap water has been tried and both of these forms were killed by one of the preparations of ipecac (No 5) in a dilution of 1—50,000 and by emetin in dilution of 1—100,000, which suggests the advisability of giving ipecac a further trial in this form of dysentery.

I am well aware that the amoebae experimented with are probably not the pathogenic varieties of amoeba, but I do not think this fact influences the importance of my results, certainly not until the time when the amoebae of dysentery have been cultivated and found by actual experiment to be non susceptible to the toxic action of ipecac. Quinine is a poison for several kinds of protozoa, notably water amoebae and the three species of malarial parasites. Dioxydiamidoazosobenzol is fatal to the spirochetes of syphilis, yaws, relapsing fever and fowl spirilloses and also to the non-pathogenic spirochetes found in the oral cavity. Until proved to be untrue it seems fair to assume by analogy that a drug like ipecac which is harmful to the amoebae found in water and on the normal human intestine is likely to be similarly harmful to the amoebae causing dysentery.

In conclusion I would state my belief that the ipecac treatment of dysentery caused by protozoa should not on light grounds be set aside in favour of any other,

but that in using this treatment great care should be taken to make sure that the dysentery is truly caused by protozoa and is not bacillary and also to obtain an ipecac that is shown by actual analysis to contain its proper amount of emetin, and when this is not possible, to insist upon obtaining the Brazil root.

"ANÆSTHETICS"

Medical Missions in India (April 1911) continues its useful series of "Symposia" and in this issue deals with anaesthetics. All the writers use chloroform as the general anaesthetic and most of them particularise that sold by Messrs. Duncan and Flockhart. Various inhalers are used, "a flame or open mask covered with a layer of ordinary white lint," a "Syme's Mask," "Junkei's Inhaler," "Skinnei's flame," "a folded towel," "a cone of spongipoline" "the drop method on a thin flannel mask," "Hyderabad or other open method." Dr. E. F. Neve of Kashmir writes as follows —

During the past eighteen years chloroform has been administered 15,480 times in the Kashmir Mission Hospital. In that period two fatalities occurred. If these are considered as absolutely due to the chloroform this gives one death in 7,740 cases. But one patient was suffering from a huge asphyxiating lympho sarcoma of the neck. The other is entered as having occurred in a case of hernia and may have been a true chloroform death.

It would appear as if in Kashmir chloroform is as safe as an anaesthetic can be. Indeed, the fact that on thousands of operations there should not have been more deaths under the anaesthetic even if not due to it is somewhat surprising.

Our experience is that chloroform is safer in the summer than the winter. In the cold weather we have had ever and anon alarms and have had occasionally to perform artificial respiration. Since we have adopted the rule of warming the drug by standing the bottle in hot water in the winter, we have had no trouble of this kind.

In looking at the records I have been surprised to see how short the period of administration usually is. On the last hundred cases it was 11 minutes 36 seconds per operation. I find that 79% of our operations take less than twenty minutes. As illustrations of time required, I may mention that an operation for haemorrhoids usually takes about 7 minutes, Radical cure of hydrocele by evulsion of sac, ten minutes, Large abscesses, three minutes, Epithelioma thigh and glands groin, twenty minutes, and so on. More important operations such as cholecystotomy, sarcoma, thyroid, etc., may take nearly an hour. But the fact that the average works out at such a low figure is a great factor in safety. Of course, it means that much less chloroform is given. The average amount given is interesting. It is two drachms forty nine minims per case. In an operation lasting for three or four minutes about a drachm is given. For a ten minutes operation the average appears to be about two and a half drachms and for twenty minutes half an ounce. If the operation lasts more than three quarters of an hour we find that more than an ounce is consumed. We use the honoured Edinburgh method and the drug is administered on a sterilized towel folded in a hollow cone. The administrator is a Kashmiri pandit specially trained for the purpose.

We find that the average period required to produce unconsciousness is one minute thirty five seconds, so it will be seen that we are in the habit of pushing the administration somewhat rapidly, giving however breaths of pure air in the intervals. The absence of secondary struggling with cyanosis, so common in Great Britain, is remarkable. The rarity of alcoholism is a very favourable factor. Primary struggling on the other

hand is much more common than in Europe. No doubt it is largely due to surprise and an element of fear and it is chiefly voluntary. Europeans as a whole take chloroform excellently in Kashmir, especially children who, if properly managed, will sometimes both go under and come out smiling.

During the same period of 18 years local anaesthesia (Hydrochloride of Cocain for eyes and also stovain for injection and infiltration) have been used in 6,000 cases. The Hyoscine, Morphin Cactus method of general anaesthesia is quite remarkable. It is especially useful in labour cases and is a preparation for chloroform or ether where some special risk is apprehended and one wishes to use as little as possible of these. With regard to spinal injections, the chief objection from our stand point is that the necessary special cleaning and preparation and administration of the injection is practically equivalent to doing another operation. Our position is that chloroform is so satisfactory in our practice that it is much the best anaesthetic in the majority of cases. In the way of special cautions I should say that the surgeon himself should always watch the commencement of the administration till the patient is under, that he should keep a subconscious watch during the time that he is operating and that it is most important not to begin the operation till the patient is quite insensible. Operations like the forcible straightening of ankylosed limbs require extra careful observance of the last rule. And of course it is essential that great care should be exercised in avoiding operation on debilitated patients, especially those who are old or specially enfeebled. A few days feeding up under observation often makes all the difference.

There are also notes of much interest on the various drugs used for local anaesthesia. At Bhiwani Dr. Fairer uses Beta Eucain (4 or 5 per cent), usually combining it with Adrenalin solution (P D & Co) for eye work. He considers Eucain to be "much cheaper," "less toxic" and "quite as effectual" as Cocain.

Dr. Mun of Kalna points out how many operations can be done by Cocain and Adrenalin. He also refers to the value of "Hyoscine, Morphin and Cactus Compound" of the Abbott Alkaloidal Co., Chicago, which though given hypodermically acts as a general anaesthetic.

Dr. Janet Gray of Benares does not find local anaesthesia very satisfactory with the natives. Dr. Jean Hogg of Nagpur in curettings of the uterus uses half a grain of morphin hypodermically. Dr. Macdonald Smith of Rajshahri in addition to chloroform uses Narcotile by a Lucas' Inhaler. The patient goes under very quickly but the effect lasts for a very short time. The patient can be kept under by following with chloroform. Dr. Linkester of Peshawar uses Eucain and Adrenalin, and also B & W's Hemesin with Eucain.

Dr. T. T. Thomson, of Jammaladugri, uses for local anaesthesia B Eucain and in selected cases Novocain with suprarenin borate, and has performed with such local anaesthesia operations like, stricture of urethra (Wheelhouse's), Laparotomy, etc., but after a considerable experience of spinal anaesthesia Dr. Thomson thinks it should be confined to cases where general anaesthesia is contraindicated or has been refused by the patient.

THE AETIOLOGY OF ENDEMIC GOITRE

We are glad to see that Capt R. McCarrison, M.D., I.M.S., is continuing his good work on goitre. He has a good opportunity of studying this disease in the Valleys near Gilgit. It is satisfactory to see that a medical officer, even though working on the far frontier and far away from Colleges and Laboratories, can do the good scientific work which Capt McCarrison has done both with regard to Chital fever (for his researches, be it remembered, were the first in the most promising work on the differentiation of the minor fevers of India) and with regard to goitre. His previous work (Proc Roy Soc, Vol 81, p 31) "afforded evidence that goitre was due to a living organism of disease present in the water of goitrous localities, that the causal factor of the disease was destroyed by boiling, and that it inhabited, in all probability, the intestinal tract of man."

The present work shows the results of the artificial production of goitre in cases of 23 individuals who consumed the suspended matter of goitre-producing water for periods of 30 to 55 days.

We quote herewith Capt McCarrison's conclusions in his present paper communicated for him to the Royal Society by Major Ronald Ross F.R.S., and read February 2, 1911, [Proc Roy. Society, B, Vol 83]. He writes —

"1. There exists in suspension, in waters which are known to be goitre-producing, an agent which is capable of initiating an hypertrophy of the thyroid gland.

"2. This agent is destroyed by boiling and is removed from the water by filtration.

"3. This agent is, therefore, either a living organism or a chemical substance the noxious properties of which are destroyed by heat.

"4. The incubation period of experimentally produced goitre is usually about 10 to 15 days.

"5. Goitre can be cured by the administration of intestinal antiseptics. The lactic ferments exercise a curative action when applied to the treatment of incipient goitres.

"6. It is very probable that the agent which is responsible for the production of goitre is a living organism parasitic in the human intestine.

"7. The disease cannot be communicated to dogs by means of watery extracts from the faeces of goitrous individuals.

The results confirm in detail those which I communicated to the Royal Society on November 26, 1908."

A NORMAL CONFINEMENT

MAJOR G. T. BIRDWOOD, I.M.S., M.D. (Cantab.), Civil Surgeon of Mussoorie, has published a very useful little pamphlet on the rules and management of a normal confinement for the guidance of medical students and general practitioners in India. Major Birdwood has recently in these

columns shown what he considers lacking in the medical training of students in Midwifery in India, and has advocated strongly the use of rubber gloves and the avoidance of making vaginal examinations in normal cases. Nothing but the sterile gloved finger or a sterile instrument should enter the vagina during labour. The rules here given are clear and simple, the detailed directions for each stage are simple and clearly explained, the note on how to save the perineum is excellent. The after-care of the patient and of the infant is admirably and briefly discussed.

The whole pamphlet is practical and full of sound advice, clearly and simply given. We recommend our readers to get this little pamphlet, indeed, if Government send a copy of it to every medical practitioner in India, it would do good. The loss of life from meddlesome and still more from ignorant midwifery in India is appalling; a pamphlet like this should prove most useful.

"THE MALAYA MEDICAL JOURNAL"

We are glad to see the revival of the *Malaya Medical Journal* which has reappeared after a subsidence of four years. It is edited by Dr. Gilbert E. Brooke, M.A., M.R.C.P., D.P.H., and costs only two dollars per annum to members of the B.M. Association. The present issue is an excellent one and has many articles of interest, viz., Dr. Keith on the agglutination reaction in cholera, or spinal analgesia by Dr. E. D. Whittle, on the milk supply of Singapore, by Dr. Middleton, and several clinical cases, notes and memoranda. We wish the Journal every success.

CHOLESTERIN is recommended as a remedy in blackwater fever (*Transvaal Medical Journal*, July 1910), in doses of 1 gramme, every 4 or 6 hours in suspension in cream or milk.

The issue of *Annals of Tropical Medicine and Parasitology*, published by the Liverpool School of Tropical Medicine (March 10, 1911) contains several articles of great value, e.g., Major R. Ross and Dr. D. Thomson on a sleeping sickness case, and Major Ross and Dr. T. G. Thomson on value of Atoxyl, vaccines, cold, X-Rays, etc., on trypanosome infection. Dr. Newstead and H. F. Coster describe a new genus of Culicidae in the Amazon region.

Those interested in Smith's operation for catarract are advised to read *The Ophthalmoscope* for 1st April. It contains several articles and extracts on catarract and a very favourable review of Lt.-Col. H. Smith's book on catarract.

The Ninth Annual Report of the Director (Dr. Paul C. Freer) of the Bureau of Science in Manila contains much of medical interest. Under the heading "Investigations" we note that experi-

ments with cultures of the acid fast organism isolated in cases of Leprosy by Dr. Clegg have continued, and fifty lepers have been treated by inoculation of the vaccine prepared, but so far with but little success. Dr. Teague has tried Nastin, but it has "not produced beneficial results." Under cholera we note that the results of treatment by (Rogers') hypertonic saline solutions were "not more favourable than when normal saline solutions were employed," but it is said that a well-marked tolerance for bicarbonate of soda exists in cholera patients. The bicarbonate has been administered intravenously, thirty or even eighty grammes have been injected, and in these large amounts produced "a change in the course of the disease" and "general mortality seemed to be lessened."

Reviews

Scientific Memoirs, No. 42, The Cultivation of the Bacillus of Leprosy—Part I— By Major E. R. Ross, I.M.S. Part II—By Captain T. S. Beauchamp Williams, I.M.S. Edited by Director-General, I.M.S. Calcutta Government Press, India, 1911. Price 9d.

We have already in our special Leprosy Supplement (May *I.M.G.*, 1911) published the latest researches by Major Ross and Captain Beauchamp Williams, I.M.S., on the cultivation of the bacillus of Leprosy.

The present Memoir has been circulated all over India, so we need do no more than call special attention to it. As soon as Major Ross laid claim to the cultivation of the bacillus, Surgeon-General Lukis took the opportunity of visiting Burma and seeing the work for himself. He was soon convinced of the importance of the work, and Colonel Bannerman of the Bombay Laboratory was called in to examine and report upon this work. The Ross cultures were examined by him and the work of Williams was done under his (Bannerman's) direct supervision. He is of opinion that the organisms found by Ross and Williams are probably identical, the only difference is that Williams' growth is sticky, while Ross's is dry. The details given in Williams' paper and the fact that in both the organism produces, apparently, a specific reaction in lepers would seem to be strong evidence in favour of this view.

This is a most important advance in the study of leprosy and is very creditable to Major Ross and Captain Williams. It is a satisfaction to all that this oldest of diseases is at last becoming conquered.

The Anopheline Mosquitoes of India.—By Major S. P. James, I.M.S., and Major W. G. Liston, I.M.S. Second, rewritten and enlarged edition, 1911. Calcutta Thacker, Spink & Co.

As is well known, the first edition of this valuable and handsome book was sold out quickly,

but the authors decided to postpone the bringing out of a new edition till there could be included in it the results of further study. The description of every species has been re-written, and the book is written with the practical object of helping in the correct determination of specimens, and it must prove extremely useful to collectors in the task of identifying their specimens. Diptorologists will turn with special attention to Chapter III which deals with the classification and identification of Indian anophelines. The authors have carefully examined the table of classification drawn up by Mr. Theobald, but workers have agreed that it is difficult, if not impossible, to identify generically the Indian species by its aid. Our authors therefore give a new method which begins by separating all species into two great groups, viz., those without scales on the abdomen and those with scales on the whole or part of that portion of the body.

We commend this chapter to the special attention of all interested in this subject.

The book is very handsomely got up and magnificently illustrated. The fifteen coloured plates of the Indian species are splendid and cannot be found in any other book on the subject.

We can strongly recommend this handsome volume to all interested.

International Clinics—Volume IV Twentieth Series, 1910 J. B. Lippincott & Co

THE present volume keeps up the reputation of the series and contains a great deal of interesting matter, also we regret to say rather more than the usual amount of padding. There must be great dearth of international material if the editors are driven to publish elementary papers on blood examination and respiration and several other minor subjects on which minor men have rushed into print. Even the general practitioner does not need the detailed and illustrated description of the use of the hypodermic syringe for the injection of Ehlich's "606." The practitioner in this country at any rate would not have written the unilluminating paper on Cholera. On the other hand, we are glad to be able to invite attention to the two excellent clinical lectures in surgery, that of Eisendrath on the retrocecal appendix and that of Ochsner on a series of cases in his service at Chicago. Both these eminent teachers are as simple, direct and lucid as was Christopher Heath in his best days.

The man of philosophical turn of mind will find the paper by Habetmann on Hypnosis and its psychological interpretation very interesting reading, and pathologists as well as clinicians in this country will find food for thought and matter for further investigation in Waithlin's learned paper on The Relation of Thromphlebitis of the Portal and Splenic Veins to Splenic Anaemia and Banti's Disease.

Landmarks and Surface Markings of the Human Body—By L. BATHE RAWLING, M.B., F.R.C.S., Surgeon in charge of Out Patients, Demonstrator of Practical and Operative Surgery, etc., St Bartholomew's Hospital Fourth Edition Demy 8vo, pp 96 and 29 Plates London H. K. Lewis Price, 5s. net

THIS is a most useful contribution to a subject which is of the greatest value to every surgeon. The book consists of five chapters and an appendix, the former dealing with the surface markings of the several divisions of the human body, and the latter giving notes on the dimensions and weights of various organs and brief particulars of the ossification of the bones of the extremities.

The book has gone through four editions. It is evident that it has been written by a surgeon, and the section on cranio-cerebral topography is particularly clear. There are still some omissions which are noticeable, such as the surface marking over the theca vertebralis which is used as a guide when performing spinal puncture. The 29 illustrations leave little to be desired.

Military Sanitation and Hygiene—By E. BLAKE KNOX, B.A., M.D. (Dub.), Captain, R.A.M.C. With 21 Illustrations [Crown 8vo, pp. xii + 346] 1911 London Baillière, Tindall and Cox Price 5s. net

WE have been very favourably impressed with this little volume on Military Hygiene. Captain Blake Knox has written a good deal on medical matters, and his book on "Buller's Campaign in Natal" was one of the most interesting published on the South African War.

It has at last been recognised by the public that the Medical Department of the Army has effected a marvellous improvement in the health of the British Army and one of the most important advances that have been made is the interest now taken by combatant officers in sanitation and in the prevention of disease among soldiers.

In the present elegant little volume the whole environment of the soldier is considered in detail, his barracks, their site, construction, lighting, ventilation, warming, etc. The important subject of the disposal of excreta is well explained, sanitation in camp and in the field is considered, and all available orders and regulations are quoted. The great subject of water-supply has due attention paid to it, and the remarks on the difficulties of providing a safe supply in the field and on the march are shown. The chapters on the soldiers' food and on clothing and equipment are ably dealt with, and in the chapter on marching stress is laid on the vital importance of not impeding the chest movements by straps and heavy loads. The chapter on physical efficiency is excellent, and the remarks on personal hygiene and the much-abused habit of cigarette-smoking are practical and useful.

The whole volume is up to date in its information, and we have only one fault to find with it and that is, that it is written too exclusively with regard to the European or rather British Army.

and next to nothing is said about the Indian Army or with regard to European soldiers in tropical climates. There is now more than one good book on military hygiene, but we would welcome a book which deals with the Indian Army and with the British Army in tropical climates.

The publishers have done their work well, and we can heartily congratulate Captain Blake Knox on its production.

Medical Society.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY

THE *Transactions* of this Society (Vol XIV, 3 and 4, up to Nov 1910) reaches our table only in the end of April.

Major S Evans, I.M.S., and Dr Surveyor read a very interesting case of abscess of the lung, treated by drainage and vaccine, which recovered.

There was a large cavity opposite fifth rib in left mid-axillary line. Light anaesthesia could only be used.

A piece of the fifth rib was removed and "without cutting away the periosteum the lung was sewn to the chest wall with chloroform-mercuric-perchloride gut in such a manner as to enclose a circular area." This area was punctured and the abscess evacuated. Dr Surveyor notes —

"Two days after the operation an injection was given of stock vaccines of *staphylococcus aureus* and *streptococcus longus*, the latter having been obtained from a case of *pyorrhœa alveolaris* and so being as much as possible allied to the infecting agent in the case in question. Two days after this injection the temperature came down to normal and was so till the end except a break of two days with the onset of the acute dysentery. As the fistulous opening had not shown any signs of getting shorter since the time of obtaining the skiagram another injection of the same strepto and staphylococci stock vaccines was given on 1st September 1910. At that time the depth of the fistula was about 3½ inches. On 17th September when the patient was discharged cured, the wound was completely closed."

Major E F Gordon-Tucker, I.M.S., read an interesting paper on Autoseotherapy in Recurrent Ascites. We quote as follows —

"In *La Presse Medicale* of February last, Audibert and Monges describe an apparently very successful treatment of recurring dropsy by the injection of the patient's own serum into the connective tissues, which, according to them, results in a considerable increase in the amount of fluid excreted by the kidneys, with a diminution in the amount of fluid held in the peritoneal cavity to such an extent that repeated tapping becomes unnecessary. In their cases fluid was withdrawn through the flank by a hypodermic syringe, and an amount varying from three to ten c.c. immediately injected into the tissues of the belly wall. In one case within three days and without other treatment, the patient was passing almost treble the quantity of urine. At the same time the measurement of the abdomen rapidly and progressively diminished. This was for a case of cirrhosis of the liver where there was no history of alcoholism, and which was said to have followed an attack of small pox two years before."

The writers recommend this treatment for cases of ascites where no treatment is available except repeated paracentesis.

If this method proves to have the satisfactory result which these writers claim for it, it ought to be very useful to us in the treatment of cases of malarial cirrhosis of the liver, where the hepatic condition is complicated with a cirrhotic condition of the kidneys in which the epithelium of the tubules are also the seat of fatty degeneration. I have therefore tried it on two such cases but with results which are not particularly encouraging."

Dr D R Baird has a long and valuable paper which is a report on the examination of the vision of the pupils in a school at Surat. He decides that the eyesight of school-going children is not what it ought to be and more medical supervision is necessary.

SPECIAL ARTICLE

CANAL ZONE MEDICAL ASSOCIATION

THE *Proceedings** of the Canal Zone Medical Association for year ending March 1910 have just been received (March 1911), and we purpose to extract freely from this most valuable pamphlet as we did last year, as few of our readers have an opportunity of seeing this volume for themselves.

The volume consists of 184 pages of small type, so it is obvious we can only extract a small portion of the most interesting matter, and therefore we give only extracts on the subjects of malaria, dysentery, liver abscess and tetanus. At the same time the paper on Bilharziasis in the New World by Dr Bayton, and that on Spinal Anaesthesia by Dr Boyd and many of the reports of cases are very good reading.

Dr S T Darling writes —

Notes on the species of **anophelines** in the Canal Zone, their relative numbers and breeding habits, were published by Mr August Busck of the U.S. Bureau of Entomology in May, 1908. Eleven species of anophelines have been collected in the Canal Zone. Of these eleven species the three commonest ones are *A. albimanus*, *A. pseudopunctipennis* and *A. malefactor*. *A. albimanus* is much the commonest anopheline in the Canal Zone and is the one oftenest taken in quarters and barracks, although the proportion of one species to another varies somewhat with the season and locality. In certain villages only *A. albimanus* is taken in barracks, while in other villages from 5 to 10 per cent will be *A. pseudopunctipennis*, and at Ancon during October, 1908, 27.5 per cent were *A. malefactor* and 72.5 per cent were *A. albimanus*. True breeding species are rarely encountered, and I know of no instance in which specimens of this species have been taken in quarters. The female anopheline visits quarters to obtain blood, which is necessary for the development of her ova. When specimens of *A. albimanus* (males and females) placed in a large comfortable breeding jar with sufficient vegetable food, such as dates and bananas, were permitted to pair, the ovaries of the females showed no development within fifteen days.

* Published at I.C.C. Press, Quartermaster's Department, Mount Hope, C.Z.

The experiments were begun in October 1908, during the rainy season and discontinued in February 1909, during the dry season. Mosquito larvae were collected by sanitary inspectors at various places in the Canal Zone. On being received at the laboratory, larvae and algae were placed in moist jars on a table in front of a window which had an eastern exposure so that they got direct sunlight for an hour or two in the morning. Predaceous larvae were killed and removed from the breeding tanks. A preliminary difficulty was experienced in the gradually fouling of the water of the tank, this was obviated in a very simple way by passing air bubbles through the water with a Paquetin cautery bulb. In this way the water was kept fresh and the larvae remained vigorous. After the larvae had pupated they were placed in bleeding out tubes plugged with cotton, and after twenty-four or forty-eight hours the newly emerged mosquitoes were transferred to jars made of lantern chimneys, covered with crinoline gauze, where they might pair and be kept from biting. Females would bite twenty-four to forty-eight hours after emerging, frequently on successive and always on alternate nights for a period of at least fifteen days. The species of anopholes used were *A. albimanus*, *A. pseudopunctipennis*, *A. franciscus*, *A. arayritensis*, *A. malefactor* and *A. apicimacula*. These mosquitoes fall into three groups, the white hind footed group, the uniformly coloured group, and the spotted legged group.

A series of bitings were conducted on suitable infected patients who were carrying tertio-autumnal or tertian gametes in their peripheral blood, using four varieties of mosquitoes. Out of several hundred mosquitoes used in the biting experiments, 100 mosquitoes were dissected, and of these 70.8 per cent of *A. albimanus* became infected, 12.9 per cent of *A. pseudopunctipennis* became infected, and none of *A. malefactor* (17 mosquitoes used) became infected, although several of the latter were purposely placed in jars with *A. albimanus* and bit at the same time persons from whom the specimens of *A. albimanus* became infected.

It is concluded from this series of biting experiments that *A. albimanus*, the common white hind footed mosquito—an extremely hardy, vigorous, rapidly developing, adaptable mosquito—is the transmitter of tertio-autumnal and of tertian malarial fever in the Canal Zone at this time. Specimens of this species infected with tertian parasites became infective between nine and eleven and a half days after the first feeding. When infected by tertio-autumnal parasites, sporozoites appeared in the salivary glands as early as the eleventh day in some mosquitoes and later than twelve and a half days in others. *A. malefactor* is not concerned in the transmission of malarial fever in the Canal Zone at this time. *A. pseudopunctipennis* is only slightly concerned in the transmission of malarial fever, this appears not only from the fact that only four out of thirty-one mosquitoes under the most favourable artificial conditions became infected, but from the additional fact that relatively few specimens are taken in quarters at the present time.

The English investigators appear to have made no attempt to determine the limits of infectiousness of man in malarial fever. To me this appeared to be, if possible, worth determining, because in the discharge of patients from the hospital it would be manifestly unwise to turn a patient out, although free from symptoms yet with gametes enough in his peripheral blood to infect every susceptible anopheline mosquito that might bite him. Efforts to determine the limit of infectiousness of man were made in the following way.

In 47 biting experiments several blood preparations were taken fresh and for staining at the time of biting. Differential counts of leucocytes and the ratio between crescents and leucocytes were determined the next morning. Leucocyte counts were occasionally made at the time the blood was taken so as to check this

method of estimating the crescents. In this way it was always known how many crescents were in the peripheral blood per c mm at the time the mosquito was infected. The next step was to weigh a number of mosquitoes before and after biting in order to estimate the amount of blood retained by a mosquito. In this way the approximate number of gametes ingested could be calculated. Again, smears were made from the midgut of mosquitoes that had a few minutes before bitten a person whose blood contained numerous gametes. From this it was found that about one-half the gametes were phagocytized by polymorphonuclear leucocytes and thus destroyed. Finally, mosquitoes which had fed but once on patients whose crescents per leucocytes had been estimated were fed subsequently on dates, and on dissection of these mosquitoes the probable limit of infectiousness was determined as being near one gamete per 500 leucocytes. From these observations, I am confident that a patient with more than one crescent for every 500 leucocytes, or 12 crescents per c mm, is infective, and it follows that such an individual should not be discharged from treatment in that condition or should be warned or required to continue treatment. Such a person is a gamete carrier and is a menace to a malarial community whenever susceptible anophelines have access to him.

The effect of quinine administration on the number of gametes in the peripheral blood was studied in a number of patients suffering from tertio-autumnal and tertian fever by the administration of 30 grains quinine daily, either with or without iron and arsenic, and by withholding quinine and merely requiring rest from labour. In tertio-autumnal infections, when there were crescents in the blood, the number was reduced by quinine, 30 grains daily, at the following rates.—For example, in Experiment 17 there were 9 crescents per 100 leucocytes on December 26, 5 crescents per 100 leucocytes on December 27, 5 crescents per 100 leucocytes on December 28, 4 crescents per 100 leucocytes on December 30, 1 crescent per 100 leucocytes on December 31, 0 crescents per 100 leucocytes on January 2, 0 crescents per 100 leucocytes on January 13.

In Experiment 20 the crescents were reduced from 67 per 100 leucocytes to one per 200 leucocytes in twenty-five days.

In Experiment 41 crescents were reduced from 92 per 100 leucocytes to one per hundred leucocytes in fifteen days, while, on the other hand, in Experiment 6, when quinine was withheld, crescents remained constantly in the peripheral blood for twenty-three days, there being 16 crescents per 100 leucocytes on admission and 20 crescents per 100 leucocytes at the end of that period.

From this it is concluded that generous daily doses of quinine, grains 10 to 1 d, will reduce the sexual forms of the tertio-autumnal parasite to a non-infectious minimum in from a few days to two or three weeks, depending on the severity of the infection.

In tertian malarial fever there is never an abundance of gametes in the peripheral blood after the disappearance of the sexual forms such as is seen in tertio-autumnal infections besides, all forms of the tertian parasite disappear from the peripheral blood within two or three days under quinine treatment and occasionally disappear when quinine is withheld.

A curious relation was observed between the average number of days that gametes remained in the blood in tertio-autumnal and tertian infections when under quinine treatment, the number being about ten in tertio-autumnal and three in tertian, and the average proportion of the incidence of tertio-autumnal to tertian malarial fever in the Canal Zone. This might be interpreted as indicating that the proportion of cases of tertio-autumnal to tertian malaria depends on the number of days that gametes are in the peripheral blood in numbers sufficient to infect *A. albimanus*, which is the host for both forms of the parasite.

The infection of *A. albimanus* and the development of malarial parasites in her midgut is not interfered with by quinine when such an infected mosquito feeds daily or on alternate days for fifteen days on patients who are receiving 30 grains of quinine in solution daily. In these instances the zygotes mature and sporozoites reach the salivary glands in the usual period.

Observations on latent malaria were made during the past dry season in several villages where the malarial sick-rate did not fall to 20 and where no anopholes were breeding. On a systematic blood examination of labourers and their families, I found that 10 per cent of the men who were at work without symptoms had parasites. Three per cent of the cases of latent malaria were of the tertio-autumnal variety and 7 per cent of the tertian variety. Among the families of Spanish and West Indian labourers the amount of latent malaria was 30 per cent. A few cases of fever would arise from this source every week, probably following some loss of resistance caused by dissipation, wetting or overheating. It is this latent malaria in every tropical community which contributes largely to the preservation of the malarial parasite and to the infection of anopholes when, after the onset of the rainy season, mosquitoes have begun to breed in numbers.

The theories of Maunaberg and Craig explain the persistence of latent malaria by the process of conjugation of two ring forms within a red blood corpuscle. During examinations of the blood, in cases of latent malaria, I have frequently seen tertio-autumnal crescents which had apparently been formed by the fusion or conjugation of two ring forms, or of two pigmented forms, but I have also very frequently seen in tertio-autumnal and tertian malaria red blood cells infected by two or more ring forms which have gone on to maturity without conjugation. Sometimes these contiguous parasites were of the same age, but often one would be a little older.

Quinine administered in latent malaria appears to destroy the ring forms only and prevents the possibility of their development into gametes. The gametes in the blood stream are probably phagocytized by splenic and hepatic endothelial cells and are not influenced by quinine directly.

The points I wish to emphasize are these:

A. albimanus, the common white hind footed anopholes, is the host for tertio-autumnal and tertian malarial parasites in the Canal Zone at this time.

A. malfactor, notwithstanding its name, does not transmit malarial fever.

A. pseudopunctipennis is only slightly concerned in the transmission of malarial fever.

In the efforts at mosquito destruction, the extermination of *A. albimanus* is of paramount importance.

Patients having crescents or tertian gametes in their peripheral blood should not be discharged from the hospital, nor should treatment be discontinued until gametes have been reduced to a non-infectious minimum. The destruction and prevention of development of the sexual parasites in man is of great importance and may be accomplished (1) by appropriate quinine treatment of all gamete carriers entering the hospital, (2) by occasional quinine treatment to destroy latent malaria, (3) by the periodical blood examination of labourers in quarters where there is a high malarial rate for the detection of the gamete carriers and latent malaria in order to carry out appropriate treatment.

Thirty grains of quinine sulphate in solution daily is an efficient dose for the purpose required.

In regard to the treatment, a variety of methods have been tried in this hospital with varying success. They resolve themselves into oral medications and local treatment in the form of irrigations. Among the former may be mentioned castor oil, magnesium sulphate, opiates, ipecac and bismuth, with combination particularly of bismuth and opium. Among the latter, quinine irrigations in varying strength, but usually 1 in 500, thymol irrigations 1 in 2,000 or 3,000 combinations of both, silver nitrate $\frac{1}{4}$ per cent, boric acid, starch, starch and laudanum tannic acid, copper sulphate, normal salt and plain water, warm and cold.

Of all the different methods used, one stands out pre-eminently, that is, bismuth by the mouth and simple irrigations, either normal saline or plain water per rectum. The method is simple, harmless, and physiological, and as our statistics show, more than justifiable. Of 129 cases treated by this method, there were 24 deaths, or 18 per cent with an average time in the hospital of 21 days. By the other methods, there were 82 cases, with a mortality of 32, or 39 per cent, and an average time in the hospital of 28 days.

The treatment herein recommended may be termed the rest-supportive treatment. Absolute rest is enjoined an absolute milk diet, of which there should be an abundance, saline or water irrigations and bismuth subnitrate in heroic doses. We do not object it the beginning if tenesmus and distress be very severe to an occasional hypodermic of morphine and atropine, but as a routine measure it is not considered good treatment.

If we consider the conditions present in a severe amoebic dysentery, we find first a lowered vitality, second, local lesions, confined chiefly to the large bowel and consisting mainly of undermined sloughing ulcers with ragged, more or less necrotic mucous membrane, associated with irritating discharge. In the borders of the undermined ulcers encroaching on the sound tissue and thoroughly protected from intestinal contents are the amoebae exercising their cytolytic action on healthy cells. From these ulcers numerous amoebae are thrown off in the discharges and these alone can we hope to destroy by any amoebicidal agent.

The modern methods of dealing with tuberculosis are not by endeavoring to destroy the tubercle in the tissues, but are directed altogether to increase the patient's natural resistance, and amoebic dysentery should be treated in the same way.

How can we hope to recover the natural resistance of the body and overcome the pathological amoebic process? It is evident from the pathological character of the lesions and also the situation whence the amoebae extend their destructive processes that local amoebicidal irrigations are futile, except in so far as they may destroy those amoebae that are liberated and are free in the lumen of the bowel. It is impossible

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Dr W E Deeks and Dr W F Shaw of the Hospital at Ancon have a valuable paper on the treatment of amoebic dysentery which if it contains nothing very new is certainly worth extracting.

to reach the living, active, deep-seated ones that lie invading sound tissue in the walls of undermining ulcers. These ulcers have comparatively small openings in the early stages, so small that solutions could not gain access. Moreover, solutions which irritate the bowel only favour the invasion of fresh areas. For these reasons we prefer normal saline solutions or plain water because it lavages the mucous membrane of the bowel, removing the irritation and toxic discharges. From two to four times daily this is recommended.

The next point for consideration is the diet. An absolute milk diet is recommended because (a) it is a perfect food, (b) because intestinal putrefaction is less marked in this than any other diet. In order to appreciate this latter point certain physiological points on digestion are of prime consideration when taken in conjunction with the observations of Musgrave, Clegg, and others that amoebæ only flourish when associated with micro-organisms.

Changes in foodstuffs after entering the alimentary canal are subjected to two main classes of fermentation, the unorganized or enzyme fermentations and the organized fermentations, or that due to fermentative or putrefactive bacteria. In the first group we have ptyalin, pepsin, rennin, trypsin, amylase, steapsin, and invertin. In the latter group a great number of micro-organisms which have a physiological importance in converting excess of foodstuffs into products which can be assimilated or eliminated as gases, complex organic compounds, or insoluble excreta. In the stomach and small intestine the organized fermentations act chiefly on the carbohydrates, but in the cæcum and large intestine the putrefactive bacteria play their rôle on the proteins and their partially converted products. The large intestine has three chief functions (1) that of being the chief receptacle where putrefactive and fermentative bacteria exercise their functions, (2) an organ of absorption where the liquid products of digestion are finally absorbed, and (3) where the non-assimilable products along with mucoid secretions are formed into faeces.

In amoebic dysentery with its ulcerative bowel lesions in the large intestine it is therefore necessary to limit bacterial action as much as possible as it favours the development of the amoebic processes.

It is because milk is the least prone to this fermentation and that it is practically all absorbed before it reaches the large intestine, that it is the ideal diet in amoebic dysentery. Eggs for these reasons are contra-indicated.

The digestive processes in amoebic dysentery are interfered with as they are in typhoid or any febrile process. The gastric, intestinal, and visceral secretions are lessened or absent, so that enzyme digestion is much enfeebled and bacterial fermentation is accelerated. An excess of protein is always taken care of in the large bowel by the putrefactive bacteria. When, as in amoebic

dysentery, the enzyme digestion is largely in abeyance any increase of the protein over a physiological diet merely furnishes so much more pabulum for the bacteria in the large intestine, which in turn favour the growth of amoebæ. For these reasons during convalescence when a pure milk diet can be departed from the carbohydrates and hydrocarbons are added to the dietary before the protein.

We now come to a consideration of the oral medication. A preliminary dose of castor oil is given to free the bowel of all products of fermentation. It is more thorough and less irritating than magnesium sulphate. In doubtful cases the administration of a dose of the latter is good because it favours the appearance of amoebæ in the stools. If the ulceration be far down in the rectum, producing a great deal of tenesmus and distress, an occasional hypodermic of morphine and atropine is administered. We do not favour the routine administration of opium for two reasons (a) because it interferes with production of enzymes and enzyme digestion, and (b) because it lessens the peristaltic action of the bowel, thus favouring the retention of toxic products which are harmful in sound mucous membrane and whose elimination is indicated.

The only other medication used here is the subnitrate of bismuth in heroic doses. We give a drachm or a drachm and a half by measurement (three drachms by weight), stirred in a glass of water every three hours till there is a general improvement, which is from three to ten or at most fifteen days.

How does bismuth act? (1) As it is largely insoluble it passes through the bowel coating over the mucous membrane as acting as a mechanical sedative and astringent. (2) Theodore Kocher, in 1883, demonstrated that insoluble preparations of bismuth were actively antiseptic. To this feature I attach the great value of subnitrate salt in the treatment of amoebic dysentery. It thus destroys or inhibits bacterial fermentative and putrefactive processes which favour the growth of amoebæ while not interfering with enzyme digestion throughout the alimentary tract. We have never seen here the toxic effects ascribed to bismuth subnitrate when administered in large doses.

The course of the disease under the above-mentioned methods of treatment varies with the severity and chronicity. In the milder cases convalescence begins on the third or fourth day, but usually towards the end of the first week. In the severer cases ten days or a fortnight may pass before the stools begin to lessen and the tongue clean. The patients must be carefully watched, and if the well-known symptoms suggesting toxicity arise, as manifested in the pulse, tongue and general condition, surgical interference must immediately be sought and a wide-open cecostomy be performed after the method pursued here by Dr Heilick. When convalescence is established the main point then

is to adopt every measure to increase the natural resistance of the patient. The more this is attained, the less prone are we to relapses.

From Dr R C Connor's paper on **Hæmoglobinuric fever** we can only extract the following remarks on treatment—

Of these theories the question of distribution probably deserves most attention, especially as regards the Philippines. From a study of paroxysmal haemoglobinuria and its symptoms, one is impressed with the symptoms in common to the two diseases, especially as regards the chill and the results obtained by clinical examination of the urine and the blood. While I believe the haemolysis in haemoglobinuric fever to be dependent on a previous malarial infection, I do not believe that quinine will act as a curative agent any more than it would in an attack of paroxysmal haemoglobinuria from exposure to cold where malaria as a factor can be definitely excluded. I consider the chill in haemoglobinuric fever as distinctly separate from the chill caused by the sporulation of malarial plasmodia, as I would the latter from a chill in paroxysmal haemoglobinuria, and our treatment has been based on this theory and followed in most cases.

I had seven patients in my series, who were being treated without the use of quinine, who had chills and parasites in the blood at intervals of from seven to twenty-two days, most of the parasites were seen on the sixteenth day after the urine had cleared. In five cases tertio-autumnal parasites were present and in two cases the tertian variety. This suggested a routine administration of quinine for prophylaxis which was usually begun on the sixth or seventh day after the urine had cleared, and given in solution with tincture of iron, 1 gr. a quinine, and drops xxx to of iron t.i.d. From these observations, and at the suggestion of Dr W E Deeks, Chief of Medical Clinic, a routine treatment was outlined as follows:

Calomel and magnesium sulphite were given on admission. Quinine was withheld, if haemoglobinuria was present, or discontinued immediately if it developed after admission. Milk diet, or milk with lime water, where vomiting was present. Basham's mixture, half-ounce every four hours during the day. Water ad lib.—Normal saline solution 500 cc by the bowel every four or five hours to be retained. The constant use of the blanket to promote perspiration and a careful record of the character and amount of all urine excreted.

Dr A B Herrick has a good article on the surgical treatment of very severe and late cases of amoebic dysentery—

"Cases of dysentery as turned over to the surgeon by the clinicians come under the following classifications—

First Those that have become chronic and remain in this condition under the best medical treatment. The great majority of the cases in the literature come in this class and most excellent results have been obtained by means of appendicostomy with the subsequent treatment attained by its aid. In this hospital I have had

practically no cases in this class, as they have reacted so favourably to the medical treatment employed that surgical intervention was unnecessary.

Second The second class comprises those cases of acute, fulminating type, which represents a severe form of the disease, and in which from the very onset the extreme toxicity of the process is so marked that in the near future the clinician will advise combined surgical and medical treatment from the start. This is a class of cases whose numbers will increase with the acumen of the clinician in his diagnosis and prognosis of the individual cases.

Third The third class includes those of a severe, acute type, which are resistant to medical treatment, and at the end of one or two weeks no improvement is found, or the patient is failing—and in this class would fall practically all the cases which have been turned over to the surgical side in this hospital.

In the treatment of these severe forms of dysentery I believe that three things are necessary: (1) Supportive treatment of the patient which would include the various hygienic and medical measures usually employed, (2) local treatment of the large bowel, which is partially obtained by rectal irrigation through the appendix or vulvar cecostomy, according to the Kader method, and (3) a complete rest of the large bowel from all irritation of food particles or decomposition products thereof passing over its surface. The significance of this third point can be readily understood if we consider the value of an artificial anus in cases of ulcerative proctitis or cancer of rectum and the marked improvement in these cases after the irritation of the bowel contents is removed.

The operation of cecostomy as performed here is very simple consumes very little, if any more time, and often can be done quicker, than the corresponding operation of appendicostomy. An incision three inches long is made directly into the abdominal cavity over the region of the cæcum. The cæcum is grasped and drawn into the wound, and two of its longitudinal bands are attached to the parietal peritoneum, one on either side of the incision by a running catgut suture thus shutting off the general peritoneal cavity and leaving a large pouch of the cæcum protruding through the wound. A few interrupted catgut sutures anchor this pouch to the skin, iodoform packing being introduced between for the sake of drainage, and to shut off contamination of the muscle layers. The cæcal pouch is opened at once, the contents sponged out, and irrigations can be started immediately. In my earlier operations I fastened a large tube in the ileum, but I found later that the cæcum with its mucous membrane would evert itself, thus allowing the ileum to discharge its contents practically outside the wound. I always open the cæcal pouch at the time of the original operation, and, although this is considered a hazardous proceeding, I have had no bad results arise therefrom in my series of cases. The operation can be performed either under local or general anaesthesia. Both methods have been used here, but in these very severe cases my preference is for a local anaesthetic.

With the exception of one of the earlier cases, all of this series were transferred to the surgical side as being in a most critical condition, and some of them practically moribund. In four of the cases the operation was practically bloodless, the patient's vitality being so low that the operation could have been performed with a knife, scissors, and thread. The series comprises eleven cases, four of whom recovered. In four of the cases there were liver abscesses in the multiple form, mainly of the small terminal variety, which of course would be hopeless under any form of treatment. Another case was complicated with pulmonary tuberculosis and died one month after the operation with marked tuberculous lesions of the lung, a dysenteric process still persisting in the bowel. Two other cases resulted fatally."

From Dr E W Hill's exhaustive and valuable article on **tetanus** we made the following copious

extracts on tetanus in the tropics, a subject of perennial interest to the surgeon in India where the infection is so widespread —

Tropical Tetanus

If we turn our attention to tropical and semi-tropical countries tetanus presents marked differences in frequency, variety, age, sex, and period of the year, as compared with colder climates, but to what degree and under what conditions has been little understood, resulting in erroneous and exaggerated statements.

Frequency

The disease is well understood to be more frequent here than in temperate zones, especially in certain localities. If we consider it as a whole, regardless of variety in any total number of cases my data confirm this opinion, other things, however, must be considered. One of the striking features of life in tropical countries is the terrible mortality of children from general, and especially convulsive diseases. Eighty-six to 87 per cent of tetanus in temperate zones is of the traumatic and idiopathic variety, occurring from five to eighty years of life. On the other hand, 86 to 87 per cent of tetanus in the tropics occurs under one year of age and includes *tetanus neonatorum*.

Tetanus in the Island of Jamaica

In a period of 17 years in this island there were 272,287 deaths from all causes, of which 1,038 were due to tetanus. One death from tetanus in every two hundred and sixty-two (262 32) deaths. Nearly six times as frequent (5 79) as in the States.

In 1905, in average year, there were 19,503 deaths. Of these 76 85 per cent were under five years of age, or 14,989, 5,597, or 37 34 per cent under one year, 9,392, or 62 66 per cent from one to five years. But 63 deaths from tetanus at all ages occurred this year, 44 from *tetanus neonatorum*, 19 traumatic and idiopathic.

The increased frequency of tetanus, due to the overwhelming percentage of *tetanus neonatorum*, will be seen by the following. In the seventeen-year period, from 1891 to 1908, already referred to with 1,038 deaths from tetanus recorded, 83 62 per cent of 868 were from *tetanus neonatorum*, and but 170, or 16 38 per cent from traumatic and idiopathic tetanus. During this period 466,843 births occurred, 62 per cent, or 289,164 illegitimate, 80 per cent, or 373,074, unattended. There was one death from tetanus in every 537 births.

We find that in seventeen years traumatic and idiopathic tetanus appeared as a cause of death, but once in 1,602 deaths from all causes, approximately the same ratio as in the area of New England. Traumatic and idiopathic tetanus appears in warm countries to reach its height at an earlier period of life, around five and five to ten years, instead of fifteen as in colder climates, and except for a late rise at twenty-five years, the same picture is presented as in temperate zones.

Influence of Climate

We do not observe the marked predominance in certain months of the year as in colder climates. In 1,068 cases (30 additional cases) from January to March, the greatest number is recorded, with October to December the smallest, as follows:

January to March	299 cases
April to June	285 "
July to September	262 "
October to December	222 "
	—
	1,068 "

We should note that the greatest number occur in the dry season, also the fact that but three months in temperate zones, June, July, and August, approximate the temperature range of the tropics. In seventeen years' record during these three months in the area of Massachusetts 248 cases are recorded. For the same period of the year in Jamaica, 273 cases are found.

Sex

The equality of the sexes suffering from tetanus in the tropics is noteworthy. Of 868 of *tetanus neonatorum*, 440 were males and 428 females. In 170 cases of traumatic and idiopathic tetanus, 83 were males, and 87 females, the females predominating.

Cuba

Cuba presents similar conditions to Jamaica, although tetanus is more frequent. In twelve years' record in the city of Havana there occurred 2,909 deaths from tetanus, of which number, 87 49 per cent of 2,545 were from *tetanus neonatorum* and 364, or 12 51 per cent, were of traumatic and idiopathic origin. In the year 1901, in Havana, 5,720 deaths are recorded, 4,169 white, and 1,551 coloured. One hundred and forty-eight cases of tetanus occurred during the year, 91 white and 57 coloured which would be one death from tetanus in every thirty-nine (38 65) deaths, or by races, one white in every forty-six (45 74), and one coloured in every twenty-seven (27 21), a high mortality rate. As in Jamaica this is not due to traumatic and idiopathic tetanus. Of these 148 cases, 86 47 per cent, or 128 were *tetanus neonatorum*, and only 20, or 31 51 per cent, belonged to the traumatic and idiopathic variety. This is an average of one death from traumatic and idiopathic tetanus in every 286 deaths during the year, which is five and one-half (5 43) times more frequent than in temperate zones. We find also in these 5,720 deaths from all causes that 1,453 or nearly 26 per cent (25 40), were children under one year of age. This would give a death from *tetanus neonatorum* in less than every twelve (11 35) births. Also 5,721 births are recorded with a death from *tetanus neonatorum* in every forty-five (44 69) deliveries.

In the Bertillon classification of this period (179 disease) tetanus as a cause of death, regardless of variety, ranks ninth in frequency in Cuba,

but with the exclusion of infantile tetanus it descends to eighty-sixth in the scale.

It will be seen in the foregoing data that tetanus in the tropics is about five and a half to six times as common as in colder climates, but only a small percentage of the disease is due to the traumatic and idiopathic variety, less than 14 per cent. In nearly four thousand cases (3,947) 86.47 per cent belongs under *tetanus neonatorum*, or 3,413 occur in infants, and is directly preventable if proper means are employed while only 534 cases were of the traumatic and idiopathic variety, or 13.53 per cent.

Tetanus neonatorum is not entirely a disease of the tropics. One thousand three hundred and seven cases occurred in Michigan, Illinois, Pennsylvania, Maryland, District of Columbia, Louisiana and intermediate States.

In a ten-year period in Louisiana there were 806 cases of tetanus, 79.8 per cent, or 642 were *tetanus neonatorum*, and only 164, or 20.2 per cent were traumatic and idiopathic tetanus. *Tetanus neonatorum* also appears in frigid zones. In the island of Heimaey, near Iceland, nearly all the children died at one time, the population being kept up by immigration.

Tetanus on the Canal Zone

Tetanus on the Canal Zone is tetanus in a tropical country modified by modern methods of sanitation and aseptic technique. It is peculiar in the relative proportion of the sexes and the small percentage of children, as compared with other tropical countries. Practically the records of Ancon and Colon hospitals represent the history of tetanus upon the Isthmus. All cases of the disease upon the line being transferred to one of these points.

Since the American occupation in 1904, to January, 1910, 107,511 cases of disease have been admitted to these hospitals, with 3,418 deaths. Of these admissions 25 were cases of tetanus, a frequency of .0021 per cent. There were 21 deaths and 1 recoveries, a mortality of 84 per cent. At Colon hospital there were 15 cases, with 13 deaths and 2 recoveries, and at Ancon hospital, 10 cases with 8 deaths and 2 recoveries. There were 21 males and 4 females, a ratio of 4.20 to 1, practically the ratio seen in the States. This is not the true tropical ratio of tetanus and is due to peculiar local conditions. In the 21 males there occurred 17 deaths and 4 recoveries. Of the four females all were fatal.

The incubation period of 8 are undetermined. The average incubation of fatal cases was 8 days, 19 hours. The average incubation of recoveries was 14 days, 12 hours. The average duration of fatal cases was 6 days, 14 hours. The average duration of recoveries was 34 days. The shortest incubation was 2 days, the longest 30 days. The shortest duration was 20 hours, the longest 57 days. Of the total cases 18

were acute, 1 sub-acute, 3 chronic, and 1 puerperal.

No case of acute tetanus recovered. The puerperal case was quickly fatal. Of the 18 recoveries 2 were sub-acute and 2 the chronic form of the disease. Only 13 of the cases were employees upon the Canal. Of the remaining 12, 2 were admissions by request of the Alcalde, and 10 were Zone charity cases.

When we remember the former black record of the Isthmus as to disease, and consider the multitude of lacerated and septic wounds of the hands and feet since 1901 treated on the line, wounds favourable to development of tetanus bacilli, and also the constant use of high explosives with the death of only one American from tetanus in six years, we must conclude that not only does it speak well for the medical and sanitary methods used, but it also emphasizes the fact that tetanus can be prevented in tropical countries, proper methods being employed, as well as in temperate zones. The average upon the Isthmus being a trifle over four cases a year.

Tetanus with an incubation period of fifteen days, with death resulting in thirty-six to forty-eight hours, the attack once developed, is as acute and severe as that manifested with an incubation of six to eight days.

Prognosis

Hippocrates stated that "such persons as are seized with tetanus die within four days or if they pass these they recover." A lapse of 2,100 years and all our modern methods and advanced technique but little modify this statement. Published data so far have been unreliable for two reasons: 1st—Reports of any groups of cases in which the clinical history of incubation and duration of the disease are ignored, are of no value whatever. 2nd—In individual reports from this or that operator of success with some particular treatment, only the favourable cases find their way into print.

As stated by Lambert, the ratio of death is in direct proportion to the length of the incubation period and severity of the infection, but in my opinion the statement fully as important should be added, that the prognosis and rate of mortality is definitely modified by the duration of the disease regardless of treatment.

Incubation

The modification of the prognosis by the length of the period of incubation has received much attention. It has been assumed that the higher mortality rate following a brief incubation period is due to increased virulence of the bacillus causing the attack. This conclusion is hard to deny or affirm.

In the table below the record of the incubation in 1,092 cases of tetanus is seen to be from one to twenty days. Cases over twenty days' incubation are not included, as they form but a

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MORTALITY OF TETANUS

small percentage of the total number, and represent a large proportion of the recoveries

TABLE X

INCUBATION IN 1,092 CASES OF TETANUS

Days	Number		Per cent
1	9		
2	18		
3	52		
4	40		
5	72	1 to 5 days	17.49
6	123		
7	201		
8	113		
9	109		
10	64	5 to 10 days	55.86
11	55		
12	64		
13	43		
14	37		
15	24	10 to 15 days	20.42
16	15		
17	28		
18	7		
19	10		
20	8	15 to 20 days	6.23
Total	1,092		

Acute Tetanus

1 to 5 days 191 17.49 %

5 to 10 days 610 55.86 %

Sub acute Tetanus

10 to 15 days 223 20.42 %

15 to 20 " 68 6.23 %

10 to 20 days 291 26.65 %

6 to 9 days 546 50 % Largest number on 7th day, 201 cases

Duration

The duration of the disease has not received the attention that it merits in modifying the prognosis. In all reports of the reduction of mortality by a specific form of treatment it should always be considered.

In 1,264 cases of tetanus, lasting from one to twenty days the duration was as follows

Acute Tetanus

1 to 5 days 574 or 45.41 %

5 to 10 " 423 or 33.47 %

1 to 10 days 997 cases 78.88 %

Sub acute Tetanus

10 to 15 days 177 or 14.00 %

15 to 20 " 90 or 7.12 %

10 to 20 days 267 cases 21.12 %

100.00 % Total 1,264 cases 100.00 %

We find on the third and seventh days the largest number of cases.

The modification of the prognosis by the duration of the disease will be seen in the table that follows.

During the first five days an average mortality of 81.18 per cent occurred.

From the fifth to the tenth day the prognosis improves about 4 to 5 per cent (4.33), the mortality being 74.47 per cent. Not until the tenth day is there any material reduction. Somewhere between the tenth and eleventh days the line of recovery crosses the death line and the patient has an even chance for life. On the tenth day of duration the mortality falls to 50 per cent. From this point the prognosis improves steadily to the fifteenth day, about 6 per cent every twenty-four hours, the average mortality recorded for these five days being 34.46 per cent. From the fifteenth day onward the prognosis improves more rapidly less than 9 per cent (8.88) of deaths occur in

cases with a duration from fifteen to twenty days. In cases extending from twenty to twenty-five days and over, it is often difficult to state the exact time of termination of the disease. Cases with this long duration represent, as with long incubation period, a large percentage of the recoveries. In 126 cases of this character 120 recoveries occurred and but 6 deaths, a mortality of 4.76 per cent. In 165 cases of Anders and Morgan, 20 days and over, there were 152 recoveries and 13 deaths.

TABLE XI

Mortality of Tetanus as to Duration of the Disease - 1,264 Cases

Days	Total	Deaths	Recovered	Mortality
Under 1 day	10	9	1	90.00
1	72	57	15	77.77
2	106	89	17	83.96
3	141	116	25	83.27
4	126	99	27	78.57
5	119	96	23	80.67
6	75	57	18	76.00
7	158	127	31	80.38
8	61	45	16	74.51
9	49	37	12	75.51
10	80	49	31	61.25
11	51	23	28	45.10
12	37	14	23	37.84
13	31	10	21	32.26
14	28	7	21	25.00
15	30	7	23	23.33
16	24	4	20	16.67
17	20	1	19	10.00
18	18	1	17	5.50
19	12	1	11	8.33
20	16	1	15	6.25
Total	1,264	950	414	
1 to 5 days	574	466	108	81.18
5 to 10 "	423	315	108	74.47
10 to 15 "	177	61	116	34.46
15 to 20 "	90	8	82	8.88
Acute tetanus,	997	781	16	78.32
1 to 10 days	997	781	16	78.32
Sub acute tetanus, 10 to 20 days	267	69	198	25.95

Summary

Days	Incubation 1,094 cases	Duration 1,264 cases	Mortality
	Per Cent	Per Cent	Per Cent
1 to 5 days	17.49	45.41	81.18
5 to 10 "	55.86	33.47	74.47
10 to 15 "	20.82	14.00	34.46
15 to 20 "	6.23	7.12	8.88
1 to 10 "	73.35	78.87	78.32
10 to 20 "	26.35	21.13	25.95

The more brief the incubation and duration the higher is the mortality. The longer the duration, the greater is the chance of recovery. The prognosis is better if trismus exists alone for a few days. Spasms extending to the trunk are serious symptoms, also elevation of temperature. The erratic temperature seen in this disease has been considered of no great moment, nevertheless it is of value in the prognosis. Temperature

rising above 104 degrees, if not preagonal, practically always indicates a fatal termination. In 1,201 cases but two recovered with hyperpyrexia. It is very rare with a favourable issue. It may be said that a sudden fall of a septic temperature to 1 or 2 degrees below normal in a case where infection from *tetanus bacilli* has been probable, often precedes the development of tetanic symptoms and its occurrence should be regarded with suspicion, even if no symptoms of tetanus are then present. Temperature falling once, having risen, does not improve the prognosis as in ordinary febrile diseases. It is impossible to state the exact process involved. Incidentally some of the highest known temperatures, 114 degrees and over, appear in this disease after death, falling in an hour or so.

Relative changes in the pulse—respiration—temperature ratio—are observed with these erratic fluctuations, viz., 140 pulse, 24 respiration, 97 temperature or 50 pulse, 40 respiration, 108 temperature, etc. Marked disassociation of pulse, respiration and temperature from the normal relation, especially with arrhythmia and falling volumes, we always give, and, appearing before the fifth day of duration, indicate a severe infection and a fatal termination, though the end be delayed.

Prolfuse sweating is a clinical feature, while inaction of the sweat glands and kidney secretions are dangerous symptoms, likewise aspiration pneumonia, which may appear suddenly.

Notwithstanding the prolonged muscular tension little metabolism is believed to occur, albumen seldom appears in the urine, creatin and creatinin are not found.

Idiopathic tetanus—The data as to this variety are unsatisfactory. It is assumed to be more fatal in hot countries than in temperate climates.

Mental aberration and delirium are not typical of an attack of tetanus, and indicate exhaustion, method of treatment or complications.

Diminished severity of a convulsion is of less value than an increased interval between them as indicating improvement.

Blood Changes

The modification of the prognosis by the blood picture is at present doubtful. But few records have been published with reported cases.

In two fatal cases Cabot found haemoglobin to be 75 per cent, and, according to the same author, eosinophiles do not diminish as in ordinary fevers.

In one fatal case at Colon hospital, with high average temperature range, in two separate counts, in a thousand cells, not a single eosinophile was present. In seven cases six deaths and one recovery, the leucocyte count, was as follows—

Brown, 1 case, fatal,	leucocytes	13,000
Cabot, 2 cases, fatal,	"	11,000
"	"	11,900
"	"	19,900
"	"	18,000

Colon Hospital		Day of Disease	
Case 1, fatal, sub acute	leucocytes	11,000 13,600 5,800 5,200 8,300 10,400 11,600 11,400	1st day 6th " 2nd " 4th " 6th " 1st " "

Colon Hospital—Age, 40, incubation, 14 days, duration, 12 days, fatal, splinter in the foot.

Differential

Polyphagocytic	56 per cent
Large mononuclear	35 per cent
Small mononuclear	7 per cent
Eosinophiles	1 per cent
Mastzellen cell	2 per cent

Colon Hospital—Case 2, age, 69, incubation, 9 days, duration, 3 days 12 hours, fatal, nail in the foot.

Polyphagocytic	81.3 per cent
Large mononuclear	5 per cent
Small mononuclear	8 per cent
Eosinophiles	6 per cent
Unclassified	3 per cent

Colon Hospital—Case 4, age, 30, incubation, 3 days 12 hours, duration, 1 day 12 hours, lacerated wound of foot, gangrene, amputation.

Polyphagocytic	395	83.67 per cent
Large mononuclear	43	10.67 per cent
Small mononuclear	24	5.9 per cent
Eosinophiles	1	1 per cent

Thirteen leucocyte counts give an average of 11,561. Increased leucocytosis in the hospital cases cannot be accounted for by the nature of the wound, as will be seen from the above histories.

Tetanus as a complication of vaccination is practically unknown in England. Allbut and Robertson observed it but once in 5,000,000 vaccinations. In the States it is more frequent than it should be. The records are not always reported. MacFarland found 95 cases, of which only 15 were reported in the literature. The incubation period is longer when associated with vaccination and very fatal. Anders and Martin report 635 cases, with 615 deaths, 4 recoveries, the issue of 16 not stated.

Puerperal tetanus usually follows abortion and miscarriage and is deadly. In the immediate dangers of interrupted pregnancy, tetanus is grouped with haemorrhage, adhesive placenta and sepsis. The mortality rate collected by Garigues was 92 per cent before, and 84 per cent after labour. In the tropics it is practically always fatal. In the temperate zones in 228 abortions, 175 miscarriages, and 228 spontaneous labours, no case appeared. Vina reports 105 cases with operative interference in 37, and Hirsch 3 cases following douches with unboiled river water. One case has occurred on the Isthmus. Tetanus as a complication of pregnancy is rare, but does not seem more fatal than in non-pregnant women. Achambaud reports a case with recovery.

No case of tetanus is decidedly hopeful unless the symptoms have existed fifteen days and are diminishing. Nearly all in youth and old age die.

Sex does not increase nor diminish the severity of the disease or its termination.

The prognosis in cephalic tetanus was found by Binet to be 35 per cent. This form may at any time change from a local attack to general tetanus. One case of this character is reported after fifty days' duration locally.

The subject would be incomplete without a consideration of anti-tetanic serum.

Tetanus Antitoxin

This is at once a specific and a failure. Under whichever head it falls will depend upon *when* it is used and the *method of its administration*.

Its failure should be readily understood. Here we are dealing with a germ whose spore is extremely resistant, a toxin whose virulence is appalling and with man, the animal most sensitive to it. 0.0005 mgm of the Berger and Cohne toxin will kill a mouse, but 0.023 mgm is necessary to destroy a man weighing 175 pounds, as compared with 30 to 100 mgms of strobchnia.

Dried pus from a tetanic horse is active after sixteen months, and earth containing spores and bacilli after eighteen years. Splinters after fifteen years are virulent. Its spore resists water, it 80° C an hour, cubolic acid, 5 per cent ten hours, and bichloride solution, 1-1000, three hours.

Bacteria are not homogenous bodies. Their molecules differ biologically. Their toxins do not unite with a nerve cell in the same manner as alkaloid poisons like strobchnia, whose union with a nerve cell is a loose one, from which it can be obtained with solvents, such as ether, chloroform, etc. Tetanus toxin is most firmly joined. It is taken into the nerve cell to become a part of it. It is assimilated in the same manner, by chemical processes, that food materials are and cannot be obtained from it by solvents. It becomes an integral part of the protoplasm.

Tetanus toxin is absorbed by the motor nerves alone. Tetanus antitoxin is absorbed by the lymph and the blood as generally administered. Laboratory experiments have not informed us as to the precise action of the antitoxin and Ehrlich's side-chain hypothesis has been valiantly used to explain the resultant condition in the economy. Tetanus antitoxin has not shown any power to dislocate poison once united with the protoplasm.

Administered immediately upon injury it has proved a specific both in veterinary and human medicine. Kocher even states that any physician should be subject to reproach who fails to use it following street and infected injuries. Care should be exercised in the variety of the serum and method used. Villard reports thirty-one cases following the prophylactic use of the serum. The standard unit in the United States since 1907 is that the immunity unit shall be ten times the

least quantity of antitetanic serum necessary to protect a 350 gm guinea-pig for ninety-six hours against the official test dose of toxin furnished by the laboratory of the P. H. and M. H. service. One hundred and fifty units per cubic centimeter is the least that is now offered for use. The prophylactic dose should be certainly 1,500 units, or ten cubic centimeters of any such standard preparation.

Its value decreases with every minute of elapsing time. The various methods of administration have been, subcutaneous, intravenous, intra-cerebral, subarachnoid, intraneurial and spinal.

Subcutaneously it is slowly absorbed. The maximum amount does not appear in the blood for twenty-four hours, the greater portion being eliminated unchanged by the secretions, milk, faeces and urine. It is not taken up by the nerve substance at all.

When given intravenously it appears in the thoracic duct in a few minutes. In spite of this, it must be borne in mind that two minutes after a fatal dose of the toxin, twice as much antitoxin is necessary as would have been required if given simultaneously, eight minutes later, ten times as much, and ninety minutes, 40 times, and so on. To lose twenty-four hours where minutes mean death is not sound medicine, even if the remedy were of known value.

Subarachnoid injections do not affect the toxins in the cord as far as is known. Whether used subcutaneously, intravenously, or subdurally, the antitoxin finds its way to the lymph and the blood, there to destroy only that part of the poison remaining in the wound, or which is circulating in the blood to attack other motor nerve plates. In all probability tetanus toxin is a compound body—tetano-spasm in producing the clinical tetanic phenomena of the disease—and tetanolysin destroying certain erythrocytes, and whose molecular structure resembles that of diphtheria toxin in having a combining haptophore group for antitoxin, and another, or toxophore group.

The intra-cerebral method has no rationale whatever and adds a serious shock to conditions already desperate. This is plainly evident if the lymph circulation of the cerebrum is considered at all.

Tetanus antitoxin administered by the intra-cerebral method simply arrives at the same point as in other methods, and is not absorbed by the nerve substance, the process being equivalent to purifying a reservoir by sterilizing the mouth of a stream.

By the intra-neurial method antitoxin must stand or fall. It must be injected directly into the nerve plexuses leading from the wound into the hypoglossal and spinal accessory, into the cauda, even into the cord itself between the sixth and seventh vertebra. The cauda must be injured to obtain results. Keen hints at a laminectomy for this purpose. Reliable statistics at present concerning this remedy after symptoms have appeared are, to say the least, discouraging.

The careful statistics of Jacobson in 203 cases, in which all the methods described were used, gave a mortality of 80.7 to 93 per cent in the acute cases, and 32 to 50 in the sub-acute.

It is a matter of grave doubt if patients dying after fifteen days do not succumb as much from exhaustion as from the disease. An important method of eliminating this factor, scarcely mentioned in our text-books, is related to the control of sensory impressions. The multitude of sensory impulses that pass over the nerves and in health, register no impression and no motor response. In this disease they do produce such action. Here we have a direct motor and a reflex sensory tetanus.

It is in preventive medicine that antitoxin finds its sphere. By its aid we can practically eliminate from our prognosis the presence of tetanus as a complication, not only in infected wounds but in post-operative tetanus. It is well known that with the most careful surgical technique upon concealed parts of the body, such as the intra-peritoneal and rectal regions this complication occurs. The literature of this variety is increasing. Peterson has recently collected records of 101 cases previous to 1890 and 49 since. Others could be added, one case has occurred upon the Isthmus at Santo Tomas Hospital Panama. The ratio of peritoneal to non-peritoneal operations as to tetanus mortality remains nearly the same to-day as in the pre-antiseptic era. It is extremely fatal in all forms. The average mortality is over 86 per cent and does not represent the true severity of the disease. In 92 cases with an incubation of less than ten days there were four recoveries, a mortality of 96 (95.65) per cent, 58 of these occurred from the seventh to the ninth day after operation, with only one recovery. In 54 cases with an incubation from ten to twenty-five days, there were 13 recoveries, a mortality of 76 (75.92) per cent. The average duration is likewise brief. In 124 cases, 117, or 94.35 per cent, lasted under ten days, and 93, or 80 (79.49) per cent of the 117 cases died in the first three days of the disease. But 7 cases had a duration of ten to twenty-five days. Antitoxin fails when the attack has once developed, as in other forms of the disease, as can be seen from the following:

Post Operative Tetanus 38 Cases treated with Antitoxin

Incubation under 10 days,	23 Deaths	22 Recovery	1 Mortality 90.65
Incubation 10 to 20 days,	15 Deaths	9 Recovery	6 Mortality 60.00

Post Operative Tetanus without Antitoxin

Incubation under 10 days,	59 Deaths	56 Recovery	3 Mortality 94.9
Incubation 10 to 25 days	38 Deaths	31 Recovery	7 Mortality 81.5%

According to current reasoning this would prove, if it proves anything, that antitoxin is of no value under ten days and reduces mortality 22 per cent in cases with an incubation of ten to twenty-five days. I know of no one with the temerity to seriously advance such a proposition. The only reasonable conclusion is that, as in other forms, the reduced mortality is due to the

character of the attack and the length of incubation and the duration.

While this form of tetanus has followed the use of silk, silk-worm gut, silver wire, kangaroo tendon and catgut, in the great majority of cases catgut has been used. In cases where the peritoneum has been opened, the mortality has been much greater than following other operations. In 119 cases with peritoneal interference the mortality was 90.76 per cent. In 31 cases in which the peritoneum was not opened the mortality was 80.65 per cent.

In the 21 cases of Richardson, 19, or 90 per cent, followed peritoneal interference. In these cases catgut was used in the suture of the wounds. By the most searching methods of investigation no contamination was found in the catgut used. He reports that at the Royal Infirmary in 4,377 operations, of which 1,492 were intra-peritoneal no case of tetanus appeared with gut from the same source as used in the fatal cases. The attempt to prove that these cases all come from one section in England, where there exists epidemically a disease of sheep known as louping ill, which presents all the symptoms of tetanus, and the presence in the abdominal cavity of a large bacillus resembling that of tetanus, has no standing with the profession.

It should be noted in this connection that for the development of the tetanus bacilli the presence of a mixed infection seems necessary, the presence of some aerobic organism that will consume the oxygen rapidly and allow the tetanus bacillus to develop. Development does not occur in healthy tissue.

Catgut has been conclusively shown to be infected, and still to cultural tests negative. In twenty-four fatal cases, isolation of the bacillus was obtained in only eight.

Aside from catgut we should take into consideration facts usually overlooked. Living bacilli occur in 5 per cent of healthy men, and up to 20 per cent in hostlers, dairymen, etc. In the domestic and herbivorous animals, such as the horse and cow, we find living tetanus bacilli, probably more virulent by their temporary stay in the intestinal canal. Spores and bacilli can be inhaled or swallowed with dust raw uncooked vegetables, berries, and other fruits derived from manured and fertilized soil.

We can certainly diminish the frequency of this form of the disease as a complication, by only using catgut that has been autoclaved at 110 to 115 degrees and the use of small sizes not over No 3.

Other measures have been suggested, such as purgation, suppression of uncooked vegetables and fruits for several days previous to operation, the administration of antitoxin while the patient is still under the anaesthetic. Such precautions seem to have a reasonable basis and are well worthy of trial.

Our prognosis should always be guarded. Recoveries in tetanus occur more from the character

of the attack than the remedies employed. Recovery is possible to-day as in the past. The case of La Flane, who was bled nineteen times and made the acquaintance of 772 leeches and weathered the storm, is no isolated exception in the history of this malady.

Tetanus is a most treacherous disease. Death occurs when apparently on the high road to recovery, and restoration to health when all hope has passed away.

Conclusions

Tetanus is comparatively rare disease, occurring in temperate zones about once in 1,520 deaths from all causes.

The mortality has not been reduced by treatment save as to prevention.

Tetanus is five and a half to six times as frequent in the tropics as in temperate climates, due chiefly to the variety of the disease.

In temperate zones 86 to 87 per cent belong to the traumatic and idiopathic variety.

In the tropics 86 to 87 per cent occur under one year and include *tetanus neonatorum*.

Climate—In temperate zones, twenty years record, 68.8 per cent occur in the warmer months of the year from May to October, 43.01 per cent in June, July, and August, most common in July and the least in March.

It predominates in the tropics, no difference worthy of note appears in the different months of the year.

Sea—In temperate zones, among males—in 200 cases a ratio of 3.60 to 1, the ratio rising at various periods of life to 9.50 to 1.

In the tropics the ratio is equal in the sexes, sometimes predominating in females.

Age—Frequency at the various ages of life.

Temperate zones, 1,000 cases—Under one year 14.08 per cent, 1 to 20 years 39.80 per cent, 20 to 40 years, 23.82 per cent, 10 to 40 years, 50.90 per cent.

Tropical zones, 3,947 cases—Under one year, 86.47 per cent, 1 to 20 years, 52.94 per cent, 20 to 40 years, 34.71 per cent, 10 to 40 years, 51.24 per cent.

In the Canal Zone in six years there were only 25 cases with 21 deaths and four recoveries, mortality, 84 per cent. Among the cases there occurred puerperal tetanus, *tetanus neonatorum*, and post-operative tetanus, three of the most deadly varieties of the disease.

Leucocytosis seems to occur in tetanus, 13 counts averaging 11,561, not always due to the condition of the wound.

Eosinophiles were diminished in two cases as in other fevers.

Incubation period, 1,092 cases, cases under one year excluded—One to 10 days acute tetanus, 73.85 per cent, 10 to 20 days, sub-acute tetanus, 26.35 per cent.

Duration period, 1,264 cases, cases under one year excluded—One to 10 days, acute tetanus,

78.27 per cent, 10 to 20 days, sub-acute tetanus, 21.13 per cent.

Mortality—The mortality in the tropics, other things being equal, is very little higher than in colder climates.

Mortality in 1,264 cases is to duration of the disease—Under one day, 90 per cent, 1 to 10 days, 78.82 per cent, 10 to 20 days, 25.85 per cent, 20 to 25 days and over, 4.76 per cent.

Not until the tenth day does the patient have an equal chance for life, and from this point the mortality decreases steadily and rapidly, regardless of treatment.

Post-operative tetanus—Incubation and duration very brief as a rule, average mortality, 86 per cent—Ninety-two cases, 1 to 10 days, mortality 95.65 per cent, 54 cases, 10 to 20 days, mortality, 81 per cent. Peritoneal interference 117 cases, mortality, 90.76 per cent, non-peritoneal, 31 cases, mortality, 80.65 per cent.

Antitoxin is of no value save as to prevention. It should always be used in conjunction with other measures.

In estimating the value of any reported treatment as to reduction of mortality, the incubation and duration of the disease must be considered. Not until at least thirty cases can be recorded with an incubation under seven days, a duration of less than ten days and a mortality of 55 per cent and under can any such treatment be accepted as modifying the prognosis. No such treatment exists at present.

Correspondence

INDIAN MILITARY FAMILY PENSION FUND

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—It might be of interest to Lieutenant Colonels of our service to draw attention to Reg 9 of the Indian Military Service Family Pension Regulations, by which a Lieutenant-Colonel of 25 years' full pay service may subscribe in Class I on paying the usual donation (Rs 810) and subscription (Rs 53) and thus obtain the highest pension for his wife (£160). I suppose very few of us read these regulations. I myself came upon this one quite casually.

I am, etc,
J R A

Our correspondent does well to call the attention of senior officers, I M S., to this clause. The printed regulations for this fund should be in the possession of all officers, and may be obtained from the Superintendent Government Printing, Calcutta. Rule 9 (para 11) reads as follows—

The option of subscribing in Class I is allowed as follows—
“ To a medical officer at the time of completing 25 years' full pay service, provided he was not previously been promoted to the rank of surgeon general but has previously subscribed in Class II. To secure these benefits without medical examination the decision of the officer must be notified within three months of the date of completing the qualifying service, but the option can be exercised at any subsequent period during active service on the production of a certificate of health signed by two qualified medical practitioners.”

This rule is not as widely known as it should be, the benefits are that senior I M S. officers (after 25 years' full pay service) can subscribe for full Colonel's pensions for their families, but if an officer intends to do so he should notify three months before and he will be admitted *without* a medical certificate, if he delays he must get a certificate of health.

The benefit is that his widow will be thus eligible for the highest pension under the I M F P Fund, viz., £160 as against £130 for widows of Lieutenant Colonels in Class II Orphan children of all classes get the same pension

To obtain this benefit the subscriber pays the extra subscription of Class I, i.e., he pays £3 16s 0d (new rates from 1st May 1911) instead of the Lieutenant Colonel's rate of £3 1s 4d and the usual donation

[See *I M G*, November 1907, p. 421, and as regards pensions by Royal Warrant, see *I M G*, 1909, February, p. 61, and especially p. 184, May, 1909.]

BUGS IN RAILWAY CARRIAGES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—With reference to Major Cornwall's letter in the February number of the *Indian Medical Gazette*, I would state that Hydrocyanic Gas has been used for some years to cleanse from bugs the sleeping carriages on the Cape Government Railways. Reference to this will be found in the report of the Government Entomologist of the Cape of Good Hope for the year 1901. The results were satisfactory and no accident had occurred in the three years of use prior to that date. One ounce of Potassium Cyanide to 155 cubic feet air space with an exposure of one hour killed 12 out of 15 bugs, the remaining three being very feeble. Eggs of the bugs failed to hatch in three tests after exposure of one hour to gas of the above strength. The Government Entomologist advises the use of 1 oz to 100 cubic feet and exposure for two hours. The gas I have found has considerable penetrating powers. It does not injure the woodwork or cloth stuff. By means of suitable tests which can easily be performed, the presence of this gas can be detected in minute quantities so that the carriages can be pronounced free from bugs before use is permitted.

If an air tight shed be built and an intelligent worker be entrusted with the performance of disinfection, the cost of the chemicals would be trivial,—6 or 7 annas per 1,000 cubic feet.

Yours faithfully,

BOMBAY

WILLIAM D H STEVENSON,
CPTAIN, I M S

ASCITES AND CIRRHOsis

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—In his interesting paper on Cirrhosis of the Liver, read before the Medical Section of the Asiatic Society of Bengal and published in the March number of the *Indian Medical Gazette*, Lieutenant Colonel Calvert, I M S, raises the question of the significance of ascites and the prognosis of cirrhosis after tapping. He opines that "Hale White and the Guy's School take an exceedingly gloomy view of the condition in so much as they teach that the average duration of life after enlargement of the abdomen has been noticed is but 3 weeks and that but rarely does a patient survive the first tapping long enough to need a second." He then quotes cases in his experience which have survived many repeated tappings and which have been discharged to and continue to perform their work as fairly useful citizens of the community.

As an old Guy's man and as an earnest pupil and late house physician of Dr Hale White, I would hasten to offer my devotions to make his observations, which on this point seem to be misunderstood, more clear.

Dr Hale White teaches that an ascite entirely dependent on portal obstruction from hepatic cirrhosis is invariably rapidly fatal and that the patient, as stated above, rarely survives long enough to need a second tapping.

But Dr Hale White and the Guy's School will recognise many clinical cases without jaundice, but with recurrent ascites, which are relieved over and over again by tapping and in the intervals between these operations the patient carries on his daily work quite fairly well. I well remember one case who was an endless source of delight to many generations of ward clerks and who was tapped over seventy times. Such patients as these (following Dr Fagge's and Dr Hale White's teaching which has been founded on post mortem i.e. cords and observations) are at Guy's diagnosed as *Perihepatitis*, the pathological condition present being an opaque thickening in part or in whole of the liver capsule. This thickening may be associated with a similar capsulitis of the spleen or indeed, occasionally with a still more diffuse chronic inflammation of the whole peritoneum.

Between these cases of ascites from perihepatitis on the one hand and from alcoholic cirrhosis on the other link cases, in which both conditions so exist occasionally do occur. If, for example, some rare case of hepatic cirrhosis survives repeated tappings then at the post mortem it will be found with practical certainty to be complicated either with perihepatitis or with some still more extensive variety

of chronic peritonitis to which the ascites has been in the main due.

Such are the doctrines of the Guy's School, and by them is explained the serious view we have been taught to take of ascites due to portal obstruction as against ascites dependent upon perihepatitis.

If any one be further interested in this subject, he will find valuable information in Dr Hale White's work on Common Affections of the Liver (Nisbet, 1908) and in his paper on "Perihepatitis with an Analysis of Forty Cases" (*Clin. Soc. Trans.*, Vol. XXI, page 219.)

Yours, etc.,
HUGH STOTT, I M S

THERAPEUTIC NOTICES

BURROUGHS WELLCOME & CO'S NEW WEST END EXHIBITION ROOM

MEDICAL men who visit London in the future should make a point of calling to inspect the extensive range of equipments on view at Messrs Burroughs Wellcome & Co's new exhibition room at 54 Wigmore Street situated in the heart of the doctors' quarter of London. These new premises are not intended to interfere in any way with the ordinary channels of supply, but to serve the purpose of a permanent exhibition.

Journals and works of reference are available and provision is made for medical men to write their letters or meet their colleagues at the exhibition room which is open to the profession from 9 A.M. to 6 P.M. on ordinary week days, and from 9 A.M. to 1 P.M. on Saturdays.

The following case of attempted suicide by BROMURAL is reported by Dr E. Rieger and shows the harmlessness of this drug—

"A female N.N., aged 51, had suffered for weeks from nocturnal insomnia. She had previously manifested some indications of mental disturbance, and on the night of 31st of December 1910 took while she was not being watched, 12 Bromural tablets remaining in the bottle with obvious suicidal intent. She slept for 9 hours soundly but was not in a comatose state. She could be easily awakened to take nourishment. After 9 hours she awoke quite comfortably, having exhibited no toxic symptoms either during her sleep or afterwards."

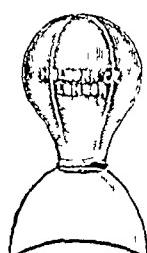
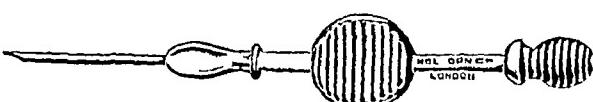
BORDIN'S MALTED MILK for infant feeding is now much used and very favourably spoken of. It can be obtained in Calcutta from Messrs B K Paul & Co and the Principal Chemists and Druggists.

The indefatigable Dr N H Choksy, M.D. of Bombay, is again to the fore in praise of RENAGLANDIN as a Cardio-Vascular Stimulant in plague. Dr Choksy concluded that Renaglandin is cheaper than Adrenalin, and is in no way inferior to it.

Renaglandin is sold in 1 oz bottles at 2s 6d each, or in sealed tubes called 'aspirules' and is prepared by Mr Oppenheimer Son & Co, Ltd, London, and whose representative in India is Mr M A J Noble, The Port, Bombay.

BOVRIL has been awarded the *Diplome d'Honneur*, the highest award at the International Cookery Exhibition, Paris.

All medical men in India are well acquainted with the excellent instruments and apparatus sold by the HOLBORN SURGICAL INSTRUMENT CO., LTD (Holborn Circus, London E.C.). Their latest catalogue is full of interest, we can, however, only mention a few of the many instruments and apparatus therein.



JUNE, 1911]

SERVICE NOTES

mentioned, e.g., salvarsan in hermetically sealed tubes (6 grammes) at 10 shillings per tube, Bayly's venipuncture needle 2s 9d., the 12s 6d. canvas case to hold the glassware for Bayly's outfit for use of salvarsan. We also may mention the detailed list of apparatus for BIER'S TREATMENT of which there are all shapes and form of suction glasses and rubber balls.

We recommend medical officers getting a copy of this useful price list.

DOWN BROS., LTD., of St Thomas' Street, London, S.E., have followed up their recent successes at the Brussels and Buenos Aires Exhibitions (Grand Prix, Brussels, 1910, and Gran Premio, Buenos Aires, 1910), by securing the Gold Medal (highest award) for Surgical Instruments and Aseptic Hospital Furniture at the United Provinces Exhibition at Allahabad, 1910.

The value of GLIDINE, and its compound have been discussed in the *Journal of Tropical Medicine* April 15, 1910. Glidine is a pure coagulated wheat protein. It is claimed to be free from poisons and extractive substances generally. It can be combined with powerful drugs, e.g., iodoglidine, bromoglidine, ferroglidine and tuesan or mercury glidine. Arsan is another combination, arsenicoglidine. The makers are Messrs Menley & James, London & New York, and the Indian Agents are Messrs Thompson & Taylor.

Service Notes

WE much regret to have to record the untimely death of Major George Lamb, M.D., I.M.S., at the age of 42, in Edinburgh.

Major Lamb was educated at Glasgow University, where in 1902 he took the M.D. with honours and the gold medal, having already taken the M.B., C.M., with high commendations. He acted as Demonstrator of Anatomy in the University and was Resident Physician and Surgeon in the Western Infirmary, and he took the Brunton Memorial Prize as the most distinguished graduate of his year. He entered the I.M.S. on 29th January 1894, and was promoted Major at 11½ years, service on 29th July 1905. He served in the Waziristan Expedition of 1894-95 (medal with clasp), but soon passed into the Bacteriological Department, was appointed Director of the Pasteur Institute of India and afterwards senior member of the Plague Research Commission in India. He married a sister of Major W. Glen Liston, M.D., I.M.S., and leaves three children.

Major Lamb's contributions to medical literature are many and important. He was a regular contributor to the *I.M. Gazette*, where his early work on the differentiation of Maltese fever was published. His work on snake venom is well known, and he contributed the article on this subject to Allbutt's *System of Medicine*. Much of his later work appeared in the Plague Commission's report and in the following *Scientific Memoirs* No. 4, Venoms of Cobras and of Daboia, No. 5 Specificity of Anti venomous Seria, No. 7 Poison of the Banded Krait, No. 10 second communication on Specificity of Anti venomous Seria, No. 16 serum from venom of Russell's viper, No. 17 snake venoms in relation to haemolysis, No. 21 Standardisation of Anti typhoid Vaccine, No. 22 Mediterranean fever in India, No. 36 observations in Rabies (Nos. 21, 22 and 36 were written in conjunction with other observers). Major Lamb was an able observer and a keen scientific worker. He was a genial and kindly personality, always ready to explain and to help, and he is a great loss to the Bacteriological Department in India.

LIEUTENANT COLONEL C. M. THOMPSON, B.A., M.B., I.M.S., who retired recently from the post of Senior Medical Officer General Hospital, and Principal, Madras Medical College, joined the Service thirty years ago. After having taken in Arts and Medical degrees in Trinity Dublin, he arrived in India in 1880, and after working for a short time in the General Hospital he was posted to Palamcottah, where he was in medical charge of the 26th Madras Infantry, in which capacity he also served with the 6th Madras Infantry at Trichinopoly for a short time in the same year. In 1882 he became Zillah Surgeon of Madura, and later in the same year he was posted to Berhampore, where he was in charge of the 7th Madras Infantry. In the next year he was transferred to Bombay as Deputy Assay Master at the Mint, and continued there, with a short break, until March, 1885. He was thanked by the Government of India for his services in this capacity, and on his return to Madras he became Secretary to the Surgeon General, which post he retained till the end of 1889. During this time he frequently acted as Fort Surgeon and as Superintendent of the Ophthalmic Hospital, and as a Professor at the Medical

College. In 1890, he was appointed Surgeon of the 4th District Madras, and in a few months was transferred to Bangalore as Residency Surgeon, but returned to his former post a year later, and acted also as Superintendent of the Lunatic Asylum. Early in 1893 he was re-appointed Surgeon of the 3rd District, and in 1894 he was posted as District Medical and Sanitary Officer of Tanjore. Two years later he was transferred to Madras as Surgeon, 3rd District, with medical charge of the Penitentiary and H. E. the Governor's Bodyguard. In 1897 he was transferred as Civil Surgeon of Ootacamund, and placed in medical charge of Army Headquarters as well. After a time Colonel Thomson proceeded on military duty with the Third Expeditionary Force and was present with the 3rd Brigade, in command of the 44th Field Hospital in all the engagements, and was thanked by Sir George Thomson, P.M.O., Tukah Field Force, for the excellent work done by the Field Hospital. He returned to Ootacamund on the 1st January 1900, and was soon afterwards transferred to Secunderabad as Staff Surgeon, and was also in charge of the Civil Hospital, the Ram Gopal Maternity Hospital and the Mustial Ramana Dispensary. At Secunderabad he was held in high esteem by successive Residents, and the universal popularity he enjoyed in the Civil Hospital is testified to by his portrait which now hangs on its walls. On Lieutenant Colonel Browning's retirement, in November, 1909, Colonel Thompson returned to Madras to assume charge of the post he had just relinquished. As Senior Medical Officer of the General Hospital he has done much good work, which has been widely appreciated, and as Principal of the Medical College he has been a *persona grata* with the students.

LIEUTENANT COLONEL GEORGE ERNEST FOOKS, of the Bombay Medical Service, retired completing thirty years' service on 6th December 1910. He was born on 9th April 1857, educated at St Bartholomew's, took the diplomas of M.R.C.S., and L.S.A. in 1879 and entered the I.M.S. as Surgeon in 2nd October 1880, becoming Surgeon Major on 2nd October 1892, Lieutenant Colonel on 2nd October 1904, and being placed on the selected list on 25th November 1908. His whole service had been spent in military employ. He served on the North West Frontier in the Zhob Valley campaign of 1884 in British East Africa, in the operations against the Mazarin rebels in 1896 receiving the medal, and in China in 1900, as senior Medical Officer at Tientsin, during the relief of Pekin being mentioned in despatches in the London Gazette of 14th May 1901, and receiving the medal and clasp.

MAJOR THOMAS ALFRED OLIVANT LANGSTON of the Bengal Medical Service, retired on 12th December 1910, completing seventeen years' service, a rather unusual occurrence, as few officers retire so early. He was born on 1st September 1863, educated at St Bartholomew's, took the diplomas of M.R.C.S. and L.S.A. in 1891 and entered the I.M.S. as Surgeon Lieutenant on 30th January 1893 becoming Surgeon Captain on 30th January 1896, and Major on 30th January 1905. He served on the N.W. Frontier of India, in Waziristan, in 1894-95 receiving the medal and clasp, and also in 1897-98 in the defence of Mulkind, the relief of Chakdura, and the action at Landakai, being mentioned in despatches, in G.G.O. No. 1089 of 1897, and receiving the medal and clasp. Most of his service had been passed on military duty, but he was for a short time in civil employ in Bengal.

COLONEL JOHN ADAMS CUNNINGHAM, of the Bengal Medical Service died of cholera, in Calcutta, where he had gone on short leave for Christmas vacation, on 31st December 1910. He was born on 29th April 1878 took the degrees of M.D. and M.Ch. at the Queen's University of Ireland in 1880 and entered the I.M.S. as Surgeon on 2nd April 1881, becoming Surgeon Major on 2nd April 1893, Lieutenant Colonel on 2nd April 1901, and reaching the selected list on 17th January 1908. He was promoted to Colonel and appointed Inspector General of Civil Hospitals in the Central Provinces so recently as 27th October last. He served on the North West Frontier of India, in the Tukah Campaign of 1897-98 and received the medal and clasp. Almost all of his service had been passed in civil employ in the Punjab, where for several years past he had held the appointment of Civil Surgeon of Lahore.

The death of an administrative officer of the I.M.S., during his tour of duty, has been a very rare occurrence for the last half century. It is now a little over nine years since Surgeon General Robert Harvey, the Director General, whom many men now serving still remember with regret, died at Simla on 1st December 1901. To find another case we must go back thirty six years to a period before any one now on the active list except Surgeon General Benson, entered the service, the last previous case being the death of Donald Macdonald at Shillong on 19th August 1874.

LIEUTENANT COLONEL ALFRED WILLIAM FREDERICK STREET, Bombay Medical Service, retired, died at Billericay, Essex, on 30th January 1911, aged 58. He was educated at St George's, took the diplomas of M R C S in 1878, L R C P, London in 1879, and D P H Cambridge, in 1889, and entered the I M S as Surgeon on 1st October 1877, becoming Surgeon Major on 1st October 1889, Surgeon Lt Colonel on 1st October 1897, and being placed on the selected list on 30th October 1902. He retired on 2nd April 1903. He served in Afghanistan in 1878-80, being present in the action on the Helmund on 14th July 1880, the cavalry affair of 23rd July 1880, the disastrous battle of Muwand, and the defence of Kandahar, and battle of Kandahar, September 1880, receiving the Afghan medal with a clasp, also in Burma in 1886-87-88, when he was mentioned in despatches, in G G O No. 339 of 1887, received the Burmese medal with a clasp, and the D S O.

ASSISTANT SURGEON EBENEZER DAVID SILVER Bengal Medical Service, retired, died at Sutton at Hone, Kent on 26th January 1911 aged 90. He was born in December 1820, educated at King's College, Aberdeen, where he took the degree of M D in 1848, also taking the M R C S the same year, and entered the I M S as Assistant Surgeon on 20th July 1852. He retired on account of ill health only six years later on 23rd August 1858. The Army Lists assign him no war service. Though nearly sixty years have elapsed since he entered the service, there are still alive no less than seventeen of his seniors, nine Bengal men, three Madras, and five Bombay.

LIEUTENANT HENRY CHARLES GUSTAVUS SEMON, of the Indian Medical Service, resigned on 27th March 1911. He was born on 9th March 1881 educated at University College Hospital, London, and at Oxford, and took the diplomas of M R C S and L R C P, London, in 1905, the degrees of M B, B Ch, Oxon, 1906, and the M R C P, London, in 1909. He entered the I M S as Lieutenant on 30th January 1909. For the last six months he had been on sick leave, so had spent barely one year in India, during which he saw no war service.

LIEUTENANT COLONEL SIR JOSEPH FAYRER, Bart., of the R A M C, stationed at Hongkong eldest son of the late Sir Joseph Fayrer, I M S, has been appointed Superintendent of the Royal Infirmary, Edinburgh in succession to Colonel W P Warburton, I M S, retired, who has resigned the appointment. The billet is purely administrative, with no professional duties, and gives its holder a good salary and an excellent house. For long past it has been held by retired men of the A M D or I M S, D S G Fasson and Surgeon General Lithgow, of the A M D, and Colonel Warburton of the I M S having filled it in succession for a period of some forty years. It was rumoured that, on Colonel Warburton's retirement, the managers of the Infirmary would not go to the services for his successor, but would appoint a member of the profession in Edinburgh. And no doubt there would have been no difficulty in finding a good man there for the billet. We congratulate Sir Joseph Fayrer and the R A M C on the new appointment.

LIEUTENANT COLONEL JOHN TASMAN WADDELL LESLIE, of the Bengal Medical Service died on his way home on sick leave, at Marseilles, on 27th March 1911. He was born at Aberdeen on 1st December 1861, and educated at the Gymnasium, in that city, and at Aberdeen University where he took the degrees of M B, C M in 1882. He subsequently took the D P H at Oxford in 1880. He entered the I M S as Surgeon on 1st October 1884, passing first, became Surgeon Major on 1st October 1896, Lieutenant Colonel on 1st October 1904, and was placed on the selected list on 2nd February 1910. In the first two years of his service he served in the Burmese war of 1886, and received the medal and clasp. After the war he had a long spell of sick leave, after which, returning to Rangoon, in 1889 he was appointed Secretary to the Inspector of Jails in Burma, who at that time was also the Civil Administrative Medical Officer of the Province. In 1890 he acted for a time as Junior Civil Surgeon of Rangoon this being his only experience of civil work in the regular line. In 1892 he officiated as Chemical Examiner and Professor of Chemistry in Calcutta and in 1893 became Secretary to the Director General. This appointment he held until in 1904, he was appointed Sanitary Commissioner with the Government of India, an office which had been combined with that of the head of the service, since the late Surgeon General J M Cunningham became Surgeon General with the Government of India in 1880, but which was now again made a separate office. On 1st January 1909 he was decorated with the C I E, and in that year also he organised the Malaria Conference at Simla.

COLONEL WILLIAM ADAIR QUAYLE of the Madras Medical Service, P M O of the Abbottabad and Sialkot Brigades,

retired, on completion of three years in the administrative ranks, on 30th April 1911. He was born on 9th December 1855, educated at Queen's College Belfast, where he took the degrees of M D, M Ch and L M in 1877 and entered the I M S as Surgeon on 30th March 1878, becoming Surgeon Major on 30th March 1890, Surgeon Lieutenant Colonel on 30th March 1898 being placed on the selected list on 25th June 1905, and reaching the rank of Colonel on 1st April 1908, with exactly thirty years' service. The Army List assigns him no war services.

BRIGADE SURGEON LIEUTENANT COLONEL ISIDORE BFRMA DOTTE LYON, whose death has recently been announced, was born in 1839 at Edinburgh, and educated at the High School there, afterwards proceeding to University College, London, for his medical course. He had a brilliant career there being medallist in four subjects and Atkinson Morley Scholar. Later he became Demonstrator in Anatomy at the College. He joined the Bombay Medical Service in 1865, and in the following year was appointed Professor of Anatomy at Grant Medical College, Bombay. In 1867 he was transferred to the Chair of Chemistry, and subsequently became Professor of Medical Jurisprudence and Chemical Analysis to the Government, for services in which capacity he frequently received the thanks of the Government, which were further rewarded by the C I E being conferred on him in 1889. He became Dean of Faculty of Medicine at University of Bombay, and retired in 1892. His great book, *Medical Jurisprudence in India*, is well known to all of us and only last year Lieutenant Colonel Waddell brought out a fourth edition of it.

MAJOR J G MURRAY, I M S, has gone to Behampur, Bengal, as Civil Surgeon.

LIEUTENANT COLONEL A H NOTT has gone on furlough for six months, Major A Gwyther officiates for him as Civil Surgeon of Howrah. Major Delany has gone to Champa as Civil Surgeon.

CAPTAIN PROCTOR, I M S, has joined civil employ in Bengal and is posted to the Medical College Hospital.

ON Colonel G W P DENNIS, I M S, taking over his duties as I G of Civil Hospitals, C P, Lieutenant Colonel Andrew Buchanan, M D, I M S, returned to Amraoti as Civil Surgeon.

MILITARY ASSISTANT SURGEON R T RODGERS has gone to the Malaria Laboratory, Amritsar, for a course of instruction.

MR H R ST CLAIR LEONARD, L R C P & S (Edinburgh and Glasgow), is appointed to the civil medical charge of the Tharawaddy District in place of Second Class Military Assistant Surgeon F H O'Leary, transferred.

MAJOR T STODART, I M S, was granted by His Majesty's Secretary of State for India study leave from the 4th October to the 23rd December 1910.

MAJOR P DEE, I M S, has been permitted by His Majesty's Secretary of State for India to return to duty within the period of his leave.

MILITARY ASSISTANT SURGEON C G THOMPSON has been granted 10 months' combined leave from 10th January.

MILITARY ASSISTANT SURGEON H C THOMPSON officiates as Civil Surgeon of Gwalior.

CAPTAIN B HIGHAM I M S, acts as Deputy Sanitary Commissioner, W R District, Bombay.

MAJOR G MC SMITH, I M S, has been appointed Civil Surgeon of Ludhiana.

MILITARY ASSISTANT SURGEON A B CORNELIUS is posted to Dimapur as Civil Surgeon.

LIEUTENANT A M D DICK, I M S has been appointed specialist in Advanced Operative Surgery, with effect from 14th January in the Burma Division.

MAJOR N P O'G LALOR, I M S, Deputy Sanitary Commissioner, Burma, is placed on special duty for a period of six months in connection with the investigation of malaria.

MAJOR G H STEWART, I M S, is transferred from Taunggyi to Rangoon and is appointed to officiate as Deputy Sanitary Commissioner, Burma, in place of Major N P O'G Lalo, I M S, placed on special duty.

SECOND Class Military Assistant Surgeon F H O'Leary, is appointed to officiate as Civil Surgeon, Taunggyi as a temporary measure, in place of Major G H Stewart, I M S, transferred

CAPTAIN L E GILBERT, I M S, was granted by His Majesty's Secretary of State for India, study leave from the 1st June to the 31st December 1910

CAPTAIN S C CHUCKERBUTTY, I M S, who was posted to plague duty in Bassein District in this Department Notification No 274, dated the 25th August 1910 is appointed Special Plague Medical Officer, Irrawaddy Division, with head quarters at Bassein, with effect from the 1st March 1911

MAJOR T H FOULKES, I M S, F R C S, has been granted one year's leave from or after 1st May 1911

CAPTAIN S BOSE, I M S, is due from furlough on 31st July

CAPTAIN T D HARLEY, I M S, is due from long leave on 10th June 1911

CAPTAIN D G RAI, I M S, is granted combined leave for 15 months

CAPTAIN E A ROBERTS, I M S, is due from one year's leave on 17th July 1911

CAPTAIN W L HARRETT, M B, F R C S, has joined Eastern Bengal for civil employ

MAJOR A T GAGE, I M S, Director, Botanical Survey of India, is granted privilege leave for two months and sixteen days, with effect from the 18th April 1911, or the subsequent date on which he may avail himself of it

MR I H BURKILL, M A, F L S, Assistant Reporter on Economic Products to the Government of India, and Official Reporter, is appointed to officiate in addition to his own duties, as Director, Botanical Survey of India, during the absence on leave of Major A T Gage, or until further orders

THE undermentioned officers of the Indian Medical Service, having completed their courses at the Royal Army Medical College and at Aldershot, have been finally admitted to the service. Their commissions will bear date the 30th July 1910 —

Phirozshah Byramji Bhauacha
Richard William George Hingston
John Bailey Tackaberry
Charles Newton Davis
Reginald Charles Clifford
Clive Newcomb
Henry Edward Shoritt
Thomas Arthur Hughes
Latafat Husain Khan
Robert de Stretton Berkeley Heilick
Hugobind Lal Batra
Murray Puisis
Walter Oliphant Walker
Duncun McNab Taylor
Vincent Philip Norman

THE leave of Captain V B Nesfield, F R C S, I M S, has been extended on study leave, till 7th May 1911

THE following is the result of the examination with marks for admission to the Indian Medical Service. Fourteen commissions were offered for competition, for which there were 21 candidates, of whom the following were successful — J Scott, 3,691, A R S Alexander, 3,502, F W Hay, 3,362, I Singh, 3,357, S M Hepworth, 3,284, H S Cormack, 3,240, G Tate, 3,203, G S Brock, 3,203, E S Goss, 3,118, J F H Moigan, 3,111, K G Pandala, 3,105, J L Sen, 3,035, C A Wood, 3,012, P S Connellan, 2,914

WITH reference to this department Notification No 362, dated the 23rd November 1910, Captain H. B. Scott, I M S, is appointed to take charge of the duties of Special Plague Medical Officer, Sagaing Division, in addition to his own duties with effect from the 1st March 1911. Captain Scott's head quarters will continue to be at Meiktila

CAPTAIN R D SAIGOL, I M S, is deputed to Amritsar on duty

THIRD Class Military Assistant Surgeon W E F Hart is placed in charge of the current duties of the Civil Surgeon and Superintendent of Jail, Toungoo, during the absence of Captain R D Sugol, I M S, on deputation

ON relief by Lieutenant Colonel R B Roe, I M S, on return from deputation, Captain M F Reany, M B, D P H, I M S, Officiating Civil Surgeon, Nigpur, is reposed to the Waikhola District

CAPTAIN H C KEATES, I M S, Plague Medical Officer Punjab, has been permitted by His Majesty's Secretary of State for India to convert the period for 21st June to 23rd July 1910 and from 1st October to 31st December 1910 of the furlough granted to him in Notification No 392, dated the 9th of May 1910, into study leave

CAPTAIN H W Illius, I M S, Officiating Civil Surgeon of Jhansi, is granted privilege leave, combined with furlough on medical certificate, for a total period of twelve months, from the 13th March 1911

LIEUTENANT R KNOWLES, I M S, medical officer in charge of the 30th Punjabis, to hold civil medical charge of Jhansi, in addition to his military duties, as a temporary measure, vice Captain H W Illius, I M S, granted leave

LIEUTENANT COLONEL H P Dimmock, M D, I M S, has been permitted to relieve Major W H Cox, I M S, acted as Civil Surgeon of Aden from 13th November to 11th December 1910, in addition to his own duties

ON return from leave Captain C C Marston, F R C S (Lond), D P H, is posted as Civil Surgeon to Surat

SURGEON GENERAL H W STEVENSON, I M S, is granted combined leave for six months

LIEUTENANT COLONEL M A T COLLIE, M B, C M, I M S, was granted six weeks' privilege leave

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

Major G MacPheison, M B, C M, I M S, on return from leave to act as Ophthalmic Surgeon, J J Hospital and Professor of Ophthalmic Medicine and Surgery, Grant Medical College, vice Major P P Kilkelly, M B, B Ch (Dub), I M S, proceeding on leave, pending further orders

Major T S Novis, F R C S, I M S, to act as Ophthalmic Surgeon, J J Hospital, and Professor of Ophthalmic Medicine and Surgery, Giant Medical College, in addition to his own duties from the date of departure of Major P P Kilkelly, M B, B Ch (Dub), I M S, pending the arrival of Major G MacPheison, M B, C M, I M S

THE services of Major J Entican and of Captain R D Saigol, I M S, has been placed permanently at the disposal of the Burma Government

CAPTAIN W S PATTON, I M S, of the King Institute, has been granted a month's privilege leave

LIEUTENANT COLONEL W A SIKES, D S O, I M S (Bengal) an Agency Surgeon of the 1st Class and Administrative Medical Officer, Baluchistan, is granted privilege leave for three months combined with furlough for one year, four months and one day, preparatory to retirement, with effect from the 16th December 1910

LIEUTENANT COLONEL A L DUKE, I M S (Bengal), an Agency Surgeon of the 1st Class, and Administrative Medical Officer, North West Frontier Province, is appointed to officiate as Residency Surgeon and Chief Medical Officer Baluchistan, with effect from the 16th December 1910, and until further orders

LIEUTENANT COLONEL W R EDWARDS, C M G, I M S (Bengal), an Agency Surgeon of the 2nd Class, is appointed to officiate as an Agency Surgeon of the 1st Class, and Chief Medical Officer in the North West Frontier Province, with effect from the 6th December 1910

CAPTAIN G C L KERANS, I M S, 12th Cavalry, has been selected as the I M S officer to accompany the troops sent home for the King's Coronation

MAJOR M P C HOLT, D S O, R A M C, assumed charge of the civil medical duties of Kasauli on the afternoon of the 22nd February 1911, relieving Lieutenant-Colonel O R A Julian, C M G, R A M C, transferred

HIS Excellency the Governor of Bombay in Council is pleased to appoint Lieutenant Colonel A Street, M B, F R C S, I M S, on return to duty, to act as Senior Surgeon, J J Hospital, and Professor of Surgery and Clinical and Operative Surgery, Giant Medical College, Bombay, vice Major V B Bennett, M B, B S, F R C S, I M S

THE services of Colonel R W S Lyons, M.D., I.M.S. (Bombay), are placed temporarily at the disposal of the Government of Bombay, with effect from the 12th May 1911, to act for Surgeon General Stevenson, just gone on leave.

The King has approved of the following promotions in the Indian Medical Service —

CAPTAINS TO BE MAJORS

Dated 28th January 1911

Edward David Wilson Griege
Campbell Dykes
William Frederic Harvey
William Charles Hughan Foister
John Johnson Urwin
David McCay
Arthur Bionfield Fly
Edward Cecil Gordon Maddock
Arthur William Tuke
George Herbert Stowart

LIEUTENANTS TO BE CAPTAINS

Dated 7th November 1910

Alexander Patrick Gordon Lorimer

Dated 1st February 1911

Robert Knowles
Wilfred Edward Brierley
James Burns Lipsley
James Alfred Shorten
Robert Beresford Seymour Sewell
Charles Henry Fielding
William Linton Watson
Francis Romney Cappinger
Wilfred James Simpson
Frederick Stevenson
Stephen Harold Middleton West
Satya Churn Pal
Reginald Stephen Townsend

NOTE — The promotion of Major George King to that rank notified in the *London Gazette* of 17th March 1911, is antedated from 28th January 1911 to 28th July 1910. This means that Major King has got his accelerated promotion.

THE King has approved of the following promotions —

MAJORS TO BE LIEUTENANT COLONELS, I.M.G.

Dated 31st January 1911

James Muir Crawford
Bawa Jwan Singh
Ernest Gerald Robert Whitcombe
Charles Henry James
Frederick O'Kinealy
Arthur William Tremuhire Bust

CAPTAINS TO BE MAJORS, I.M.S.

Dated 28th January 1911

Colin Hudson, D.S.O.
Charles Frederic Weinman
Hamilton Maxwell Cruddas
George King
George Patrick Thomson Groube
Pandit Prinayal Atul
William MacMullen Pearson
David Claude Kemp

SURGEON GENERAL HENRY HAMILTON, C.B., has retired from the service and Colonel A. M. Crofts succeeds him as P.M.O. of the 2nd (Riwat Pind) Division on 6th April 1911. Surgeon General Hamilton entered the service in March 1876. He was educated at Queen's College, Belfast. He has remained in Military employ and has seen much service, beginning with Afghanistan in 1878-80, action of Charasiab, and at Kabul, Office of Shekhoabadi. Roberts' march for the relief of Khandahar. Mentioned in despatches, medal, 3 clasps and the bronze star. In 1895 he took part in the relief of Chitral, medal and clasp, in 1897-8 when the Frontier war blazed out, Surgeon Major Hamilton took part in the operations at Samana and in the Kunram, and was mentioned in despatches—2 clasps, later on he did splendid work in the awful march through the Tush country and was (like Colonel T. Grange, I.M.S.) specially promoted—medal and clasp. He was next promoted P.M.O., Lahore, and on 25th March 1907 was made Surgeon General, and now retires having attained the age of 60 years.

COLONEL A. M. CROFTS, C.I.I., who succeeds as Surgeon General is another Irishman. He entered the service in March 1877 and became full Colonel in October 1908 (after 31 years'

service). He acted as Inspector General of Civil Hospitals in Bengal in 1903 and has recently been P.M.O., Sirhind and Jullundur Brigades. Colonel Crofts was for many years Residency Surgeon at Gwalior and has seen service in Afghanistan, with the Khandahar and Khyber Field Force and at Jugdhalik. In 1882 he was in Egypt and took part in the battles of Kassassin and Tel el Kebir, (medal, clasp and bronze star). In 1884 he was in Zhob Valley Expedition and in 1900 he was in China in charge of the Hospital Ship provided by H.H. the Maharaja of Gwalior.

CORONEL H. HENDLEY, I.M.S., who now is promoted, is a brother of Colonel T. Holbein Hendley, C.I.T., I.M.S., well known in Rajputana and in Bengal. He entered the service in April 1881. He is an M.R.C.S. (Eng.), 1882, L.S.A., M.D. (Dub.), and D.P.H. (Cumb.). He served at Suakin in 1885, medal and bronze star in Burma 1890-8, medal and clasp. He has been a Civil Surgeon in the Punjab and held various appointments in the Medical College there and only recently succeeded the late Colonel J. A. Cunningham, I.M.S., as Civil Surgeon of Lahore. He becomes a full Colonel at the age of 50 years and with only 27 years service—which is a promotion should go.

We regret to hear of the death from peritonitis of Lieutenant A. de C. Cranston Charles, I.M.S., at Lahore, on 17th April. Lieutenant Charles was a nephew of Sir Havelock Charles, K.C.I.O. (I.M.S., ret'd), and was educated at St. Thomas' Hospital and Cambridge. He was a scholar of Magdalen College and before entering the service he acted as Assistant Demonstrator of Anatomy in the University of Cambridge. House Surgeon to the Northampton General Hospital and House Physician, the York County Hospital. He entered the service on 1st February 1905, and had been appointed Specialist in Advanced Operative Surgery for Lahore Division. It is sad to hear of such a very promising career being so suddenly ended.

MAJOR R. H. ELLIOTT, I.M.S., I.R.C.S., was granted special and combined leave on urgent private affairs for 6 months from 5th May 1911.

MAJOR L. M. HILLINGTON, I.M.S., was transferred to Vizagapatam as Civil Surgeon and Superintendent of the Medical School, vice Major Loukes.

CAPTAIN T. W. HARVEY, I.M.S., is due out from long leave on 10th June 1911.

CAPTAIN R. D. WHITCOMBE, I.M.S., is transferred, on return from a special Malabar course at Amritsar, as District Medical Officer, Malabar.

CAPTAIN E. A. ROBERTS, I.M.S., is due back from long leave on 17th July 1911.

CAPTAIN F. W. CRAIG, I.M.S., is due back from long leave on 20th June 1911.

MAJOR H. S. WOOD, I.M.S., on return from leave, is appointed Civil Surgeon of Rajshahai District.

CAPTAIN D. P. GOUL, I.M.S., is appointed Civil Surgeon of Mymensingh.

MR. H. MANSFIELD, I.M.S., is appointed to be Civil Surgeon of Faridpur.

Under the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations, privilege leave to the amount due combined with furlough and study leave for a total period of two years is granted to Captain J. Good, I.M.S., officiating Junior Civil Surgeon, Rangoon, with effect from the date on which he may avail himself of the privilege leave.

MAJOR P. D. F., I.M.S. on return from leave, is appointed to be Civil Surgeon, Mandalay, in place of Major A. Denton, I.M.S., transferred.

MAJOR A. FINTON, I.M.S., is transferred from Mandalay and is appointed to officiate as Junior Civil Surgeon, Rangoon, in place of Captain J. Good, I.M.S., proceeding on leave.

LIEUTENANT COLONEL H. THOMSON, I.M.S., Sanitary Commissioner, Madras and Lieutenant Colonel R. Robertson, I.M.S. Professor of Medicine, were put on deputation on 1st April 1911 to render the usual course of military training prior to promotion.

MAJOR C DONOVAN, I M S, Madras, has got an extension of furlough up till 15th August 1911

THE services of Lieutenant Colonel C H Bedford, M D, I M S (Bengal), are placed at the disposal of the Government of Burma, with effect from the 18th April 1911

LIEUTENANT COLONEL C H BEDFORD, M D, I M S (Bengal) is granted privilege leave for one month and sixteen days, with special leave on urgent private affairs for four months and fourteen days in continuation, with effect from the 18th April 1911

THE services of Major Pandit Piaraylal Atal, I M S, are replaced at the disposal of His Excellency the Commander in Chief in India

THE services of Captain M F Reaney, M B, I M S, are placed permanently at the disposal of the Hon'ble the Chief Commissioner of the Central Provinces

THE services of Major F H Watling, M B, I M S, are placed temporarily at the disposal of the Government of Bengal for employment in the Civil Department

THE services of Lieutenant Colonel H Hendley, I M S, Civil Surgeon, Lahore, Professor of Forensic Medicine, and Toxicology, Medical College and Medical Officer of the Government College, Lahore, were placed temporarily at the disposal of His Excellency the Commander in Chief in India from the afternoon of the 7th to the 25th March 1911, inclusive

MAJOR E S PECK, I M S, from 11th April has been granted six months' privilege and special leave

MAJOR P ST C MORE, I M S, has been granted twenty months' combined leave from 25th April 1911

MAJOR N P O GORMAN LALOR, M B, D P H, I M S, made over, and Major G H Stewart, M B, D P H, I M S, received, charge of the duties of the Deputy Sanitary Commissioner, Burma, on the afternoon of the 27th March 1911

BREVET COLONEL H F CLEVELAND, I M S has been appointed P M O, Aden Brigade

COLONEL CLEVELAND has only 2½ years' service, but was made Brevet Colonel with effect from 1st January 1911

LIEUTENANT COLONEL H F CLEVELAND, I M S, Secretary to the Principal Medical Officer in India, from 11th September 1910 to 6th January 1911 inclusive, on private affairs, under the leave rules for the Indian Army (the first 60 days on privilege leave). Pension service 21st year commenced 22nd December 1909

This cancels the grant of leave to Lieutenant Colonel Cleveland, notified in India Army Order 121 of 1911

THE services of Captain M F Reaney, M B, I M S, are placed permanently at the disposal of the Hon'ble the Chief Commissioner of the Central Provinces

SENIOR grade Civil Assistant Surgeon Govind Narain Das, officiating Civil Surgeon on being relieved, from Ballia to Unao, vice Lieutenant N S Harvey, I M S D, granted leave

LIFUENTNANT N S HARVEY, I S M D, Civil Surgeon of Unao, privilege leave for two months and fifteen days, from the 3rd May 1911

CAPTAIN LEF ABBOTT, I M S, made over charge of Fezapore Jail to Lal Maya Das on 31st March

THE following transfers of Distinct Plague Medical Officers are gazetted —
Captain A Cameron, I M S, to Delhi
Captain E J C McDonald, I M S, to Gurgaon
Captain N F Griswood, I M S, to Delhi
Captain H M H Melhuish, I M S, to Delhi
Major V H Roberts, I M S, to Rohtak

CAPTAIN H E J BATTY, I M S, assumed charge of the civil medical duties of Malakand on the afternoon of the 5th April 1911, relieving Captain C H Cross, I M S

DR C BANKS Protector of Emigrants, Calcutta, and Superintendent of Emigration reported his departure from India, on leave, on the 1st April 1911

MAJOR B R CHATTERTON, I M S Civil Surgeon, Muzaffarpur, reported his departure from India, on leave, on the 1st April 1911

CAPTAIN H B FOSTER, I M S, reported his departure from India, on leave, on the 30th March 1911

CAPTAIN H R DUTTON, I M S, Officiating Civil Surgeon, Purnea, is appointed to act as Civil Surgeon of Muzaffarpur, during the absence, on leave, of Major B R Chatterton, I M S

MAJOR C F WEINMAN, I M S, Officiating Resident Physician, Medical College Hospital, Calcutta, is appointed to act as a second class Civil Surgeon and is posted to Purnea, vice Captain H R Dutton, I M S, transferred

SENIOR Assistant Surgeon Babu Haui Mohan Sen, of the Dinapore Subdivision and Dispensary, is appointed temporarily to act as a Civil Surgeon of the second class and is posted to Khulna

CAPTAIN J D SANDES, I M S, Probationer in the Chemical Examiner's Department Bengal, is appointed, as a temporary measure, to act as Resident Physician, Medical College Hospital, Calcutta, during the absence, on deputation, of Captain W V Coppingel, I M S

CAPTAIN H B STEPHEN, I M S, is appointed to act as First Resident Surgeon, Presidency General Hospital, during the absence, on deputation, of Captain J W D Megaw, I M S

CAPTAIN J MASSON, I M S, Officiating Civil Surgeon of Serimpoore, is appointed to be Second Resident Surgeon, Presidency General Hospital, vice Captain H B Foster, but will continue to act in his present appointment

CAPTAIN A D WHITE, I M S, Officiating Resident Surgeon, Medical College Hospital, Calcutta, is appointed to act as Second Resident Surgeon, Presidency General Hospital, during the absence, on deputation, of Captain J Masson, I M S

CAPTAIN A H PROCTOR, I M S, is appointed to act as Resident Surgeon, Medical College Hospital, Calcutta, during the absence, on leave, of Captain E O Thurston, I M S

CAPTAIN W C ROSS, I M S, Deputy Sanitary Commissioner, Bihar and Chota Nagpur Circle, is allowed privilege leave for three months, with effect from the forenoon of the 27th June 1911

CAPTAIN A C MACGILCHRIST, I M S, has taken the degree of Doctor of Science (in Pharmacology) at Edinburgh University, 31st March 1911

MAJOR A FENTON I M S, on transfer to Rangoon, made over, and Major P Dee, I M S, on return from leave received, charge of the Civil Surgeoncy, Mandalay District, on the afternoon of the 12th April 1911

Senior Military Assistant Surgeon and Honorary Major A H Nolan on proceeding on fifteen days' privilege leave, made over, and Third Class Military Assistant Surgeon P A Scanlon received charge of the current duties of the Civil Surgeon, Prome District, on the afternoon of the 9th April 1911

MAJOR W LETHBRIDGE, I M S, Mewar Bhil Corps, got one month's privilege leave from 18th April or date of availing himself of it

LIEUTENANT COLONEL A STREET, M B, F R C S, I M S, has been allowed by His Majesty's Secretary of State for India to return to duty

LIEUTENANT COLONEL J B JANFSON, I M S, is granted combined leave from 16th June 1911 for one year, six months and fourteen days

MAJOR R F BAIRD, I M S, Civil Surgeon, from Mainpuri to Gonda, vice Major R G Turner, I M S, granted leave

CAPTAIN F W SUMNER, I M S, Officiating Civil Surgeon, from Bijnoi to Shuhjahanpur, vice Lt-Colonel J Morwood, I M S, granted leave

CIVIL Assistant Surgeon Trishita Nath Singh, attached to the sadr dispensary at Mainpuri, to hold civil medical charge of the Mainpuri district in addition to his other duties vice Major R F Baird, I M S, transferred

THE Civil Surgeon of Moradabad to hold visiting medical charge of Bijnoi, vice Captain F W Sumner, I M S transferred

LIEUTENANT COLONEL J M CADELL, I M S, Civil Surgeon of Ghazipuri, privilege leave, combined with furlough, for a total period of one year and four months, from the 26th April 1911.

MAJOR R G TURNER, I M S, Civil Surgeon of Gonda, privilege leave, combined with furlough, from the 10th April 1911 to the 14th January 1912.

LIEUTENANT COLONEL J MORWOOD, I M S, Civil Surgeon of Shahjahanpur, privilege leave, combined with furlough in India, for a total period of six months, from the 17th April 1911, or subsequent date.

CAPTAIN T W HARLEY, M D, I M S, has taken the F R C S I, by examination.

CAPTAIN LISTER, I M S, Surgeon to the Commander-in Chief, has gone on leave, and Major Davy, R A M C, officiates for him.

IN addition to the list of I M S officers who passed the Examination of the London Tropical School in December last, the following names should be added—Capt H C Keates, M D, B S (Lond), I M S, and Capt L E Gilbert, I M S. Capt Gilbert and Capt Keates also took the London M D in Tropical Medicine in December.

MAJOR J PENNY, I M S, has been granted by His Majesty's Secretary of State for India an extension of leave on medical certificate for six months.

THE services of the undermentioned officers are placed permanently at the disposal of the Government of Burma—
Major J Entrican, M D, I M S
Captain R D Saigol, F R C S, I M S

THE services of Civil Assistant Surgeon F R Smith are placed at the disposal of the Director, Persian Gulf Telegraphs, from 1st November 1910.

CAPTAIN G F I HARKNESS I V S, an officiating Agency Surgeon, 2nd class, and Civil Surgeon, Wana, has been granted privilege leave for one month and 27 days under Article 260, Civil Service Regulations, with effect from the forenoon of the 15th March 1911.

THE services of Lieutenant Colonel R B Ross, M R O S, L S A, I M S, Civil Surgeon, Nagpur, are placed at the disposal of the Government of India, Home Department, with effect from the 30th April 1911.

MAJOR W H. KENRICK, I M S, on special duty in connection with Malaria investigation, is placed on special duty in the office of the Sanitary Commissioner, Central Provinces, with effect from the 10th April 1911.

PRIILEGE leave for three months, under Article 260 of the Civil Service Regulations, is granted to Military Assistant Surgeon W W Stuart, L R C P & S I, Officiating Civil Surgeon, Bhandara, with effect from the 5th May 1911, or the subsequent date on which he may avail himself of it.

MILITARY ASSISTANT SURGEON F G CUTLER, Assistant to the Civil Surgeon, Jubbulpore, is appointed to officiate as Civil Surgeon, Bhandara, during the absence, on leave, of Military Assistant Surgeon W W Stuart, L R C P & S I, or until further orders.

CAPTAIN C A GOURLAY, I M S, Civil Surgeon, Kamrup, is allowed combined leave for eighteen months, viz., privilege leave for 2 months and 16 days under Article 260 of the Civil Service Regulations and furlough for the remaining period, under Articles 308 (b) and 233 of the Civil Service Regulations, with effect from the 7th April 1911.

ON return from the leave granted to him in *Punjab Government Gazette* Notification No 344, dated the 12th April 1911, Lieutenant Colonel J R Adie, I M S, resumed charge of his duties as Chief Malaria Medical Officer, Punjab, on the forenoon of the 30th March 1911.

ON his reversion to the Punjab, Lieutenant Colonel H Hendley, I M S, was placed on special duty in the office of Inspector General of Civil Hospitals, Punjab, in connection with the preparation of the Annual Dispensary Report, with effect from the forenoon of the 25th March 1911 to the afternoon of the 4th April 1911.

CAPTAIN W S NEALOR, R A M C, has been appointed to act as Civil Surgeon, Ahmednagar, vice Captain A Murphy, M B, I M S, from the 1st April 1911, in addition to his own duties.

MAJOR R W ANTHONY, M B, F R C S (E), I M S, is granted, from the date of relief, such privilege leave of absence as may be due to him on that date.

THE services of Captain G I Davys, I M S, are placed at the disposal of the Government of India, Home Department, with effect from the forenoon of the 10th April 1911.

THE services of Captain G Holroyd, M B, I M S, are placed temporarily at the disposal of the Government of Bengal for employment in the Jail Department. He is posted to Bhagalpuri.

CAPTAIN J ANDERSON, Indian Medical Service, is appointed to officiate as an Agency Surgeon of the 2nd class, and is posted as Civil Surgeon, Dera Ismail Khan, with effect from the 3rd April, 1911.

THE undermentioned 4th Class Assistant Surgeons, having completed five years' service in that class, to be 3rd Class Assistant Surgeons, with effect from the 31st March 1911.

Frederick George Witbread
William Henry Blaize
Cecil Harcourt Mauchant
Wilfred George Sherard
Septimus George Jackson
Dudley Hope Joseph Nichols
James William Clement Lopez
Eldon Bertram Walker
Joseph Aloysius D'Costa
John Willoughby Kenneth Ashe
Percival Edward Nery
William George Sandways
Michael Beishom deFontaine

Notice.

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters, and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

General Hospital Madras Report for 1910
Fowler's Bacteriological and Enzyme Chemistry, Arnold
Leftwich's Pocket Book of Treatment, Arnold
Kocher's Operative Surgery
Blake Knox's Military Hygiene
Shenton's Disease in Bone, Macmillan & Co (Price 4s 6d)
B Moore's The Dawn of the Health Age (3s 6d) J and A Churchill
New and non official Remedies, 1911 (Amer Med Association)
Mayo's Collected Papers, 21s net W B Saunders & Co
Marrow's Diagnostic and Therapeutic Technic, 21s W B Saunders & Co
Cabot's Differential Diagnosis, 21s W B Saunders & Co
Hygiene Laboratory, U S A Bulletin 72 Washington, Govt Press
Hygiene Laboratory, U S A Bulletin 71 Washington, Govt Press
Punjab Asylum Report, 1910
Punjab Chemical Examiner's Report, 1910
R B & A Administration Report
Green's Pathology (11th Ed) Ballière, Tindall & Cox
R Miller, Medical Disease of Children J Wright & Sons, Ltd

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Major E R Rost, I M S, Rangoon, Capt Beauchamp Williams, I M S, Bombay, Major J W Cornwall, I M S, Coonoor, Major R Blackham, R A M C, Peshawar, Capt J Stevenson, I V S, Bombay, Major S P James, I M S, Simla, Major T H Toulkes, I M S, Waltair, Capt J C Fraser, I M S, Hyderabad, Major Stewart, I M S, Quetta, Capt Megaw, I M S, Calcutta, Lt Col H Smith, I M S, Amritsar, Capt E C Taylor, Dr White Robertson, Gya, Lt Col Castor, I M S, Bassin, Asst Surgeon Subrahmanyam, Barhampore, Dr Bhupal Singh, Agra, Capt O A Gill, I M S, Lahore, Lt Col P Hehir, I M S, Lansdowne, Capt T Rutherford, I M S, Bilaspur, Lt Col H Stott, Secunderabad, Lieut Kosworth, I M S, Lt Col Gibson, I M S, Lt Col A R Anderson, I M S, Chittagong, Capt Clements, I M S, Belfast, Dr Bramachari, Calcutta.

CORRIGENDUM

In the *Indian Medical Gazette* for April (p 139) the name of the writer of the article on Biliary Cirrhosis should have been Bhupal Singh and not as printed Dr Bhupal Singh is a teacher in the Agra Medical School.

Original Articles

A CLINICAL REPORT ON THE TREATMENT OF LEPROSY BY THE USE OF A VACCINE PREPARED FROM CULTIVATIONS OF THE LEPROSY STREPTO TRIX |

BY E R RO^T,

MAJOR, I M S,

Rangoon

A CLINICAL report on the treatment of leprosy by the use of a vaccine prepared from cultivations of the leprosy streptothrix

CASE No 1

Maung Po Shain, Burman, aged 17, duration of disease, 6 years (probably longer)

CONDITION BEFORE COMMENCING TREATMENT

Present State—Very advanced nodular and anaesthetic type with fufuraceous thickness all over the body. No portion of original skin left unaffected by the disease. General health fair. Lungs clear. Urine normal.

Face—Nodules all over eyebrows, and ear very much thickened and pendulous, lips thickened, nose ulcerated in alæ nasi, nodules on chin. Areas affected by nodules anaesthetic.

Neck—Skin slightly fufuraceous, reddened patches alternating with white patches.

Arms—White patch on right arm from armpit to elbow with red areas and nodules on forearm. Hands very much thickened and full of nodules.

Trunk—Chest clearest part, but skin alternates between red and white patches with partial anaesthesia. Back exceedingly fufuraceous and skin very thick.

Legs—Exceedingly fufuraceous, so much so that no healthy skin can be seen.

Toes—Much thickened, ulcers between toes, perforating ulcers, left ball of great toe.

22nd March 1909—Injected 5 c.c. vaccine T L O 1/1000 grain, which was followed by weekly injections. Temperature rose to 102°F, the rise commencing the next morning and temperature remaining high during the afternoon, began to fall towards the evening. Temperature rose again on second day to 100 and was normal on the third day. Patient states he experienced a feeling of malaise and felt very bad, but on the second day had a feeling of lightness in the limbs and felt quite well.

3rd April 1909—Temperature rose to 103°F, remaining up for four hours and then falling rapidly, slight rise on second day. There is a marked improvement in the appearance of the skin and apparent subsidence of nodules on face.

Patient's appearance is evidently commencing to change considerably. The skin of the leg is decidedly less fufuraceous.

13th April 1909—Great improvement in general appearance, skin of legs less fufuraceous, patches of skin now visible. Ulcers between toes healed. Perforating ulcer healing.

27th April 1909—Skin of legs greatly improved, areas of healthy skin now visible, return of sensation in ears.

25th May 1909—Return of sensation to some extent in hands and in patches. Ulcer on foot now healed.

19th August 1909—Changes for the last two months gradual, ulcers on feet completely healed, sensation has returned in ears and hands, except on the actual nodules. The appearance of the man has quite changed. The fufuraceous appearance of the skin of the legs going away. No discharge from the nose. Patient very well and active.

20th November 1909—Nodules on the face have gone down considerably and the body is clearing.

17th January 1910—The body is very much clearer, the patient states that he feels much better, and his general health has much improved.

18th March 1910—The nodules on the hands and feet only remain the same, all the other nodules have either disappeared or are subsiding gradually.

20th June 1910—Body now completely clear of nodules, there remaining only a slight discolouration in patches, the skin of the face is now showing up more, formerly his features being almost unrecognisable.

14th September 1910—He reacts well to the injections, the temperature rising to 103°F, his general health is good, and his mental condition improved.

3rd January 1911—The discolouration of the skin is disappearing, and it is assuming a normal appearance, while the nodules on the legs, feet and face have become much flattened, being nearly on a level with the skin.

15th April 1911—Present condition. Stains of scars of former nodulation, no loss of sensation, a few nodules remain on the face but these are almost on a level with the skin. The masses of nodulation on the thighs are rapidly disappearing, leaving healthy skin.

On commencing the treatment of this case, which was one of the worst cases of nodular early leprosy I have seen, it was remarked that it would be a good test case. The very remarkable improvement in this case, although it has extended over a period of two years, shows that this method of treatment, though slow, is hopeful even in the worst cases. The treatment throughout the case, as well as the treatment of the following cases, has varied slightly from time to time as regards dosage and method of preparation, but the vaccine has been always

prepared from the Kone Sein culture since May 1910. On commencing the treatment of this case not a square inch of his epithelial surface was healthy, his mental condition was very bad, he behaved in an idiotic manner, and was looked upon by his fellow lepers as insane. He is now perfectly rational, quiet, strong and in good condition, and his skin is now clear over large areas.

CASE NO. 2

Ma Hinn Thein, Burmese girl, aged 8, duration, unknown

Face—Both cheeks much thickened, a large lump on the right cheek $2'' \times 1\frac{1}{2}''$ and extending down towards inferior maxillary. Left cheek not so large. Small nodules in lobules of ears. Nose affected, ulceration with discharge. Examined, full of leper bacilli. Thickening of skin of wristjoints.

Fingers thick. Anesthesia both legs. Ulceration of feet. Large area of nodules on back of both thighs and gluteal region. Both thighs and legs totally anesthetic below gluteal region.

Forearm anesthetic as far as elbow, large areas of nodules.

22nd March 1909.—After injection temperature rose to 103°F , and fell on the second day, rising again to 100° and remaining normal on the third day.

13th April 1909.—Injections were given weekly. There is marked improvement in subsidence of nodules generally, especially the large mass on the right cheek and partial return of sensation in the forearm and legs, except on the nodular areas.

General health very much improved, ulcers on great toes now completely healed. No discharge from nose.

19th August 1909.—Fingers much reduced, the patch on the right cheek now much flattened. Health good, no ulceration, no fresh nodules. Anesthesia of legs and thighs much reduced.

14th September 1909.—Nodular area on gluteal region and back of thighs has remarkably improved, and appearance has quite altered, normal skin appearing in the areas. Nose very much less prominent.

15th November 1909.—Sensation has returned in the legs and the skin of the body is clearing.

18th February 1910.—No loss of sensation anywhere in the body.

20th April 1910.—The forehead is now clear of nodules, there are no ulcerations anywhere in the nose or on the body.

12th August 1910.—The nodular thickening of the right cheek remains, the body is clear of nodules, and the sensation has returned, the ear nodules have become much reduced and the *alæ nasi* nodules much smaller. There are still indications of thickening about the fingers and toes.

6th March 1911.—The body is now entirely clear of patches, the face, hands and feet still contain the original nodules, but they are much flattened.

CASE NO. 3

Mr H., Englishman, aged 52, duration of disease 5 years

A very advanced case with raised nodular areas distributed in a variegated manner all over the body. Iritis in left eye and inflammation of conjunctiva. Loss of sensation in legs. Ulceration in *alæ nasi*. Ears pendulous with nodules. Nodular areas on legs and thighs broke down in early period this year.

20th April 1909.—Was given weekly injections as in the previous cases. Sensation in legs beginning to return. Ulcers beginning to heal, nodular areas sinking towards the centre.

13th May 1909.—Ulceration in nose healed. Ulcers on thighs and legs healing, leaving depressed scars, nodular areas necrosing towards the centre, and becoming white.

13th July 1909.—Very marked improvement in the condition, large areas of healthy skin now visible. General health is very good.

31st August 1909.—Areas of original nodular masses becoming more and more depressed and of a white colour. Eye much improved. Sensation in legs returned.

26th October 1909.—Condition very much improved, no ulceration, sensation in legs returned, skin is assuming a healthy appearance, colour fading in places.

28th December 1909.—Beyond trouble connected with leprotic iritis with congestion of conjunctiva and the remains of a few patches on the body and legs, this patient has no symptoms of the disease.

2nd August 1910.—The eyes are better and congestion of conjunctiva subsiding. The original areas of nodulation are now whitish with a pigmented border.

4th December 1910.—The condition of his body throughout now shows no signs of the original disease, the treatment is, however, being continued. The man is strong and healthy and in good spirits, and desires to continue the treatment for some time, fearing its return.

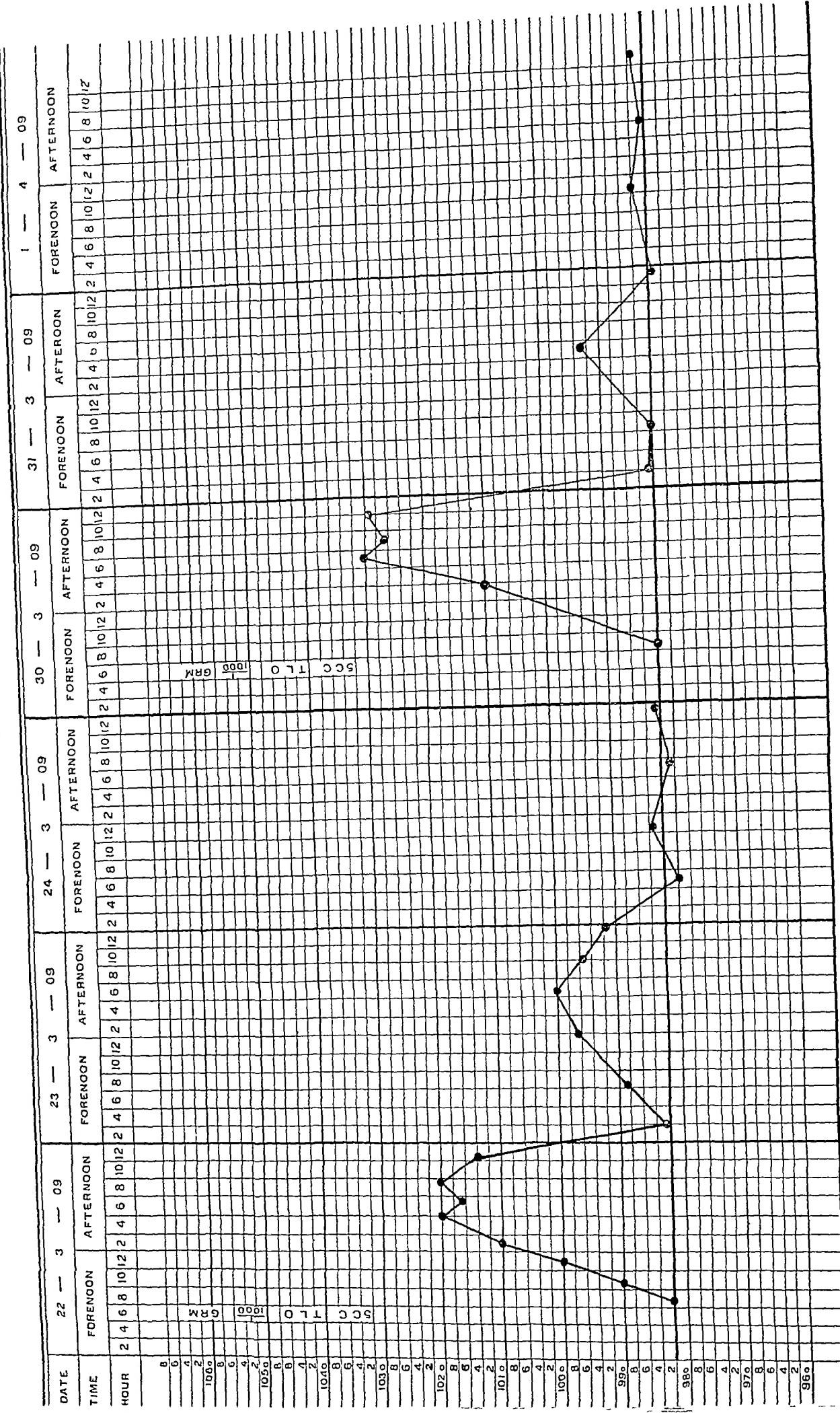
This case is interesting, firstly, because he is now practically cured, and secondly, because he was treated in the Calcutta General Hospital in 1905 by the old lepiolin (See *Indian Medical Gazette* for May, July, September and December 1904 with regard to the cases treated by lepiolin. Lepiolin was subsequently reported on as prepared from contaminated cultures, and its use was prohibited by Government.) The patient states he was cured by the original treatment in 1901, but that it subsequently broke out again.

CASE NO. 4

Maria, Karen female, aged 13, duration of disease 7 years, daughter of a leper.

THE TREATMENT OF LEPROSY BY THE USE OF A VACCINE PREPARED FROM CULTIVATIONS
OF THE LEPROSY STREPTOTHRIX

By MAJOR E R ROST, I M S,
Kenogami



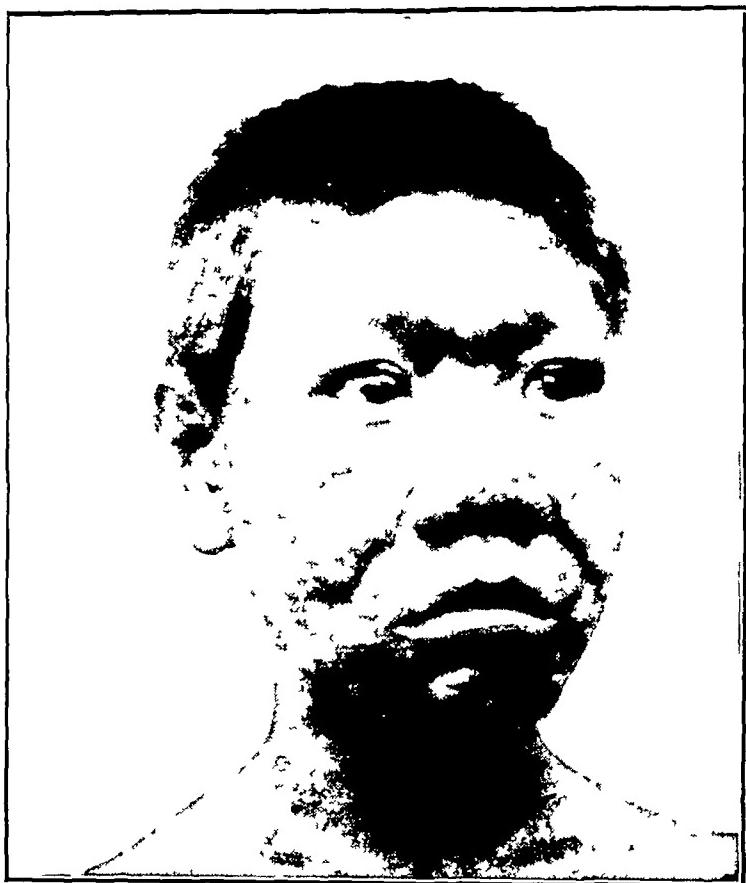
THE TREATMENT OF LEPROSY BY THE USE OF A VACCINE PREPARED
FROM CULTIVATIONS OF THE LEPROSY STREPTOTHRIX

BY MAJOR E R ROST, I.M.S.,

Rangoon



MAUNG PO SHAIN I
Condition on commencing treatment, March 1909



MAUNG PO SHAIN II
Condition in September 1909



MAUNG PO SHAIN III



MAUNG PO SHAIN IV

Original Condition—Right and left arm anaesthetic as far up as the axilla with white anaesthetic patches. Small anaesthetic patches on the small of the back. Small white spot below the left nipple. Both cheeks white anaesthetic patches. Anaesthetic patch $9'' \times 4''$ on inner side of left thigh. Right leg one patch $1\frac{1}{2}''$ in diameter. Five smaller patches. Left leg, one patch $5''$ long and two other smaller patches. Nodulation of forehead and both cheeks and chin.

13th June 1909—Was given weekly injections of vaccine. Anaesthesia of legs slightly returned.

20th August 1909—Sensation of arms returning. Sensation of legs completely returned.

18th October 1909—Health much improved. The white patches are becoming reddish in the centre.

1st December 1909—There has been no flesh lesion, and the white patches are gradually assuming a healthy appearance spreading from the centre.

4th April 1910—The nodules on the face, chin and forehead have become much smaller.

16th August 1910—Nodules very much reduced in size and white areas reduced very much showing atrophy of the spreading edge and appearance of healthy skin, complete return of sensation and improvement of general health.

4th December 1910—The nodules have almost disappeared being replaced by scars. Her general health is good.

13th April 1911—In spite of a somewhat lengthy delay in the weekly injections of vaccine due to menstrual troubles, she has improved remarkably.

CASE NO. 5

Elizabeth, Burmese woman, aged 22, duration of disease 9 years.

Present Condition—Ears 3 inches long, very much nodulated and thickened, nodules on both cheeks.

Ulceration in alæ nasi. Nose nodular. Lips thickened and nodular. Chin nodular. Nodules over both arms which are anaesthetic. Hands and wrists nodular, fingers much thickened.

Gluteal region full of nodules. Nodules over both knees and dorsum of feet. Toes thickened and ulcerated. Large perforating ulcer, ball of great toe of right foot.

Left leg and thigh anaesthetic, health very poor.

11th August 1909—Given weekly injections of vaccine. Very marked improvement in general health. Nodules all over face very much gone down. Arms and left leg not so anaesthetic.

12th December 1909—Ulcer on right foot healed, small ulcers healed. Nodules on gluteal region disappeared.

1st April 1910—Nodules on ears gone down. Appearance of face quite changed.

16th August 1910—Nodular and thickened appearance of hands very much reduced. Sensation in right arm completely returned. Ulceration of ears healed. Only remaining signs are nodulation of fingers and toes.

3rd January 1911—She is assuming a healthy appearance, though her scars of original nodulation disfigure her. There has been delay in the treatment of the case so that she has not had the regular weekly injections, but the improvement in her condition is generally acknowledged and her general health is good.

CASE NO. 6

Maung Dway, Eurasian, aged 9, duration unknown.

Present Condition—On the right thigh behind a red patch $1\frac{1}{2}''$ diameter. Rough surface with black needle points, anaesthetic. Two smaller ones on the same thigh. Below left nipple one patch $1''$ diameter, anaesthetic. Left arm patch from elbow to wrist, outer ring of patch red and thick, inner white and rough, anaesthetic.

Fourth and fifth fingers contracted. Right ear, red patch, anaesthetic. Very emaciated.

25th October 1909—Given weekly injections of vaccine. Anaesthesia in all patches now returned. General health greatly improved.

Patch on left forearm almost disappeared.

12th February 1910—Appearance of skin over patches much improved. White areas have become natural colour so that original patches are scarcely visible.

20th June 1910—General health good. Patch on right thigh disappeared, and right ear normal. Fingers still slightly contracted.

16th August 1910—Completely cured. No signs of original disease. In very good health.

This boy has been examined on several occasions since this and found in good health without any signs of return of symptoms.

CASE NO. 7

Reverend Father B. B., French, duration about 5 years.

Present Condition—Disease progressed very rapidly, and was seen by me in its early stage in 1905.

Whole body affected by nodules, eye-brows and forehead very much thickened with nodules, large mass of nodules over bridge of nose, large mass over both cheeks. Ear very much thickened. Masses scattered over front and back of trunk. Ulceration in nose.

He was very badly affected. Ulcerations frequent and spasmodic blisters occasionally.

Feet very bad and ulceration very troublesome. Anaesthesia in hands and feet, legs, thighs and forearms.

27th June 1909—Given weekly injections of vaccine. Ulcers healing. Other progress very slow.

8th October, 1909.—Nodules on face remarkably gone down, giving face quite a different appearance. Ulceration healed.

Many nodules on trunk vanished. Patient stopped treatment for several months on account of urgent private affairs, and left the asylum.

4th April 1910.—Forehead and nose and face now completely free from the original nodulation. The body has greatly improved. The fingers and feet alone remaining without improvement.

17th June 1910.—Since adopting the additional treatment of half ounce of salt daily with a non-carbo-hydrate diet and no alcohol, his condition has much improved now. Nodules, face and fingers almost entirely disappeared.

After this date the patient left the asylum and went to his village where he has continued the treatment, the vaccine being sent to him. His improvement is great, the nodules on the face and fingers having almost entirely disappeared so that one would not be able to diagnose his condition without examining his body, where the nodules still remain in certain areas.

CASE NO. 8

A mild case with a white patch on the left and right cheek, the left larger than the right, both being anaesthetic. No other signs of the disease on the body.

Treatment commenced in December 1909 with weekly injections of vaccine.

In May 1910, the white patch on the left cheek became red and the sensation returned.

In July 1910, the left side of the cheek became normal, skin coloured with complete return of sensation. While on the right side the patch has become red, the skin having a normal appearance towards the centre, the sensation returning in the centre.

This lad left the asylum in February, discharged "cured" of the disease.

CASE NO. 9

Mah Ket, aged 8, Burmese girl, duration 3 years.

Treatment commenced in December 1909.

Face—White patch on forehead above right eyebrow, large white patch on right cheek, on left cheek the same as the right cheek but larger and extending down as far as the chin. All these areas are anaesthetic.

Body—Six large white patches, all anaesthetic over the front of abdomen and chest. Two patches on the neck at the back, two large ones over each scapula, all anaesthetic.

Right arm—Large patch extending from elbow to wrist, anaesthetic.

Left arm—Large patch extending all over the arm, anaesthetic.

Buttocks—Large patches, all anaesthetic.

Legs and thighs—White patches, all anaesthetic.

Given weekly injections of vaccine. In April, sensation returned in patch on forehead while all the patches are assuming a reddish appearance instead of white, particularly towards the centre.

In July, the sensation in the centre of some of the patches is returning, while the centre of all the patches have assumed a normal skin appearance, only the edges remaining white with a margin of pigment.

In December 1910, the patches had become much smaller and the sensation returned. She is in good health, and the skin is assuming a normal colour over the areas originally white which became red by the treatment.

CASE NO. 10

Aye Moung, Tamil boy, aged 9 years. Also an anaesthetic case.

Treatment commenced in December 1909.

Face—Large white patch over forehead, ear, nose, and on each cheek.

Arms—Two large patches over right upper arm and one on forearm extending down to wrist.

Body—Large patch over left shoulder and extending over the front of the chest.

Back—Several patches scattered over back. One large patch over right buttock and several smaller patches over the lower portion of the left buttock.

Thighs—Numerous large patches.

Legs—Numerous large patches.

All these patches are anaesthetic. This patient had weekly injections of vaccine. In May 1910, a marked change was noticed as in the other anaesthetic cases treated. The centre of the patches becoming red and extending toward the periphery, while the sensation to pain returned. The present state shows that the redness has subsided in some of the patches, the skin having assumed the normal colour and appearance while the edges alone in some areas remain, the pigment round the edge being increased.

August 1910—Much improved, the white patches have assumed a normal colour and sensation is returning.

February 1911—Sensation has returned in all patches. The colour of the patches is still not normal but is slowly changing.

His general health is good.

CASE NO. 11

Chinnasawmy, Indian Christian, aged 30, duration of disease 5 years.

Treatment started in March 1910.

Anaesthetic patch over the whole of the left shoulder of an area of 2 sq. inches.

Anaesthetic patch on the right leg extending up to the knee, anaesthetic patch over the whole of the dorsum of the left foot from the bases of the phalanges to the ankle joint.

Suffers severely from shooting pains all over the body, particularly in the left shoulder and arm, the right leg and the left foot. It is now one year since the commencement of the treatment, the sensation has entirely returned in all the patches, which have partially disappeared, there remaining only slight indications of the original areas, by slight observation of the skin, the pains ceased after the first three months of treatment and never returned. He was a thin miserable looking man and is now much stouter and is anxious to leave the asylum declaring himself cured.

CASE No. 12

O N, Eurasian lad, aged 13, duration 3 years
Tubercular nodule on the chin

Anæsthetic patches on the legs extending up to the thighs with raised sulphuraceous skin. Has been under treatment since August 1910.

The tubercular nodule on the chin has almost disappeared, there remaining now only a discolouration, the original elevation having subsided. The sensation in the legs has entirely returned, and there is no sign of the patches on the limbs.

I consider that he is cured, as there is no reaction after injections of larger doses of the vaccine.

It will be seen from the clinical report of these twelve cases which were all voluntary cases and not chosen ones that five are now practically cured as far as clinical observation goes, while the remaining are all remarkably improved.

The vaccine was injected weekly, and temperature records taken almost always showed a rise of temperature varying from 100° F to 105° F. The difficulty throughout has been to ascertain, firstly, what method of preparation of vaccine is the most beneficial, and, secondly, what is the dosage, and, thirdly, how often should it be given.

Firstly, with regard to the method of preparation of the vaccine, we tried several modifications as mentioned in the Scientific Memoirs, No. 42, New Series. The difference between them has not been marked, but I am inclined to think that sterilized six weeks' broth cultures give the best results.

Secondly, the dosage question — I have been using all along 1 cc of a 1 in 400 dilution of dried culture or the equivalent thereof, and 1 cc of a sterilized six weeks' broth culture. It is advisable in my experience to obtain only slight reactions in nodular cases, whereas in anæsthetic cases the higher the reaction, the better the result. The reason for this probably lies in the fact that in the anæsthetic cases the bacilli being situated in the nerves, there is not the danger of metastasis that there is in the large masses of the nodular variety.

In the third case, the improvement after vaccine injection may come on some months

gradually after injection, and believe this to be so from two cases (not reported) on whom I commenced the treatment who did not continue it, but whom I happened to see some months later. With the idea of trying to ascertain the interval at which injections should be given, opsonic indices were taken of treated cases, but the time at my disposal in this laborious research precluded the possibility of arriving at any result which one might rely on, and I had to judge the period from clinical observation of the treated cases. It is also probable that the time at which the vaccine should be repeated varies according to the case.

The treatment of these cases has been carried out at the Kemmendine Lepeh Asylum, where, for the last seven years every facility has been given me by the Reverend Fathers Freynet and Reiw and Sister Catherine. Treatment has lately been started on several fresh cases, clinical report of which will be submitted at a later date.

A RESUME OF RESEARCHES ON ENDEMIC GOITRE

BY ROBERT McCARRISON, M.D., M.R.C.P.,
CAPTAIN, I.M.S.,

Agency Surgeon, Gilgit, Kashmir

ONE of the chief functions of the thyroid mechanism is to protect the body from the many toxic substances, which find their way into the blood stream from the intestinal tract. Frequently the thyroid gland undergoes hypertrophy to enable it to meet the demands made upon its protective function, and especially is this the case in the malady which is known as "goitre."

DEFINITION OF GOITRE

"Goitre" may be defined as an infectious disease, in which the seat of infection is the intestinal tract, and of which the enlargement of the thyroid gland is the dominant symptom. The thyroid enlargement is, in its beginning, a hyperæmia only, or a simple hypertrophy due to increased functional activity of the organ. The increase in size is a protective one, comparable to that of the spleen in certain other infectious diseases, and, like the spleen, it rapidly returns to a more or less normal size when the causes which have stimulated it to increased functional activity have been removed [1]. The definition which I have just given of "goitre" is one which applies more especially to 'endemic goitre'. But this definition can be made more general, and 'goitre' defined as a condition of thyroid enlargement brought about by the presence in the blood-stream of certain toxic substances of metabolic, bacterial or putrefactive origin. For example, endemic goitre is due to the absorption of a specific toxin from the alimentary tract, the thyroid hypertrophy which is met with especially in young

girls about the age of puberty is connected with the metabolic processes which take place at this period, while the enlargement of the thyroid gland during pregnancy is a protective hypertrophy owing to the increased metabolism, and to the absorption of toxic products from the uterine tract [2] I have little doubt but that in the last two cases also toxic absorption from the gut plays a part

AETIOLOGY OF GOITRE

Having defined 'endemic goitre' as above, a brief résumé of the aetiology of the condition will enable the reader to more fully appreciate the points of treatment to be presently brought out. Endemic goitre is a disease of country districts, that is of districts of unprotected water-supplies. It is most common in mountainous localities, chiefly because the water-supply of these localities is always an unprotected one. It occurs also in the plains of India and of other continents [3]. It is found at high altitudes and at the sea-level, in villages of the Alps and Himalayas, as well as in the cases of the Desert of the Sahara [4]. It is especially a disease of temperate and subtropical climates, it does not arise in places which are excessively hot or cold during the whole year, though the toxic agent of the disease survives great cold as well as great heat. Consequently, we find that it is a disease of the spring and autumn in Himalayan India, and a disease of the rains in the plains of India [3]. I have not yet made up my mind as to the influence—if any—of the geological structure of the soil, in the production of the disease, to which Bucher and others attach great importance [5]. In my own district of Gilgit it has no influence.

WATER AND GOITRE

The toxic agent of the disease is contained in the water-supply of endemic localities. This agent is picked up by the water from the soil. In the plains of India, for example, it is before and during the rains that goitre most commonly commences and most rapidly develops [3]. The toxic agent of the disease is washed from the soil into the drinking-water by the rain. In some parts of Central Australia the only water-supply is rain water, collected in tanks on the roofs of the houses. Here the toxic agent is blown into the tanks which are always open to catch the rain, and which are, I am informed, seldom cleaned. The toxic agent of the disease can be destroyed by boiling. It can also be removed by filtration through a Beikfelt filter [6] though I notice that Professor Wilms of Heidelberg does not think so [7]. The disease can be artificially produced in man by consuming the residue removed from the water by filtration. I have so produced it in myself, and in ten other individuals [8]. If this residue is boiled, and adminis-

tered in large quantities to man, the disease does not arise. Further, if a thoroughly filtered goitre-producing water is consumed by sufferers from incipient goitre, the thyroid enlargement will disappear. Agricultural labourers and those whose habits bring them into contact with the soil are more subject to the disease than others. Soil infection, therefore, is the essential factor in the production of the disease. Boiling or filtering the water, or both, will not prevent or cure the disease so long as other sources of infection from the soil are not excluded [1]. The disease can be conveyed by vegetables grown on infected soil [9]. I, myself, have seen three cases in which I was able to exclude all other sources of soil infection with the exception of vegetables grown in a highly infected locality. There is a marked tendency for a water to lose its goitre-producing properties due to subsidence, exposure to direct sunlight, etc. For example, one village may be highly goitrous and another a few hundred yards lower down on the same mountain stream, and supplied by the same water, may be almost wholly free from it, *vise versa*, the village above may be free, and another village on the same stream may have examples of the disease in abundance. The prevalence of the disease depends on the degree of pollution of the water where it reaches the consumers. It depends largely on the position of the village relative to the water-supply and to the irrigated fields. If the houses are on the stream, or *Kul* above the irrigated fields, goitre will not be present in large amount. If, on the other hand, the houses are below the irrigated fields, or in them, and irrigated water is consumed, then goitre will be prevalent. In India goitre is very largely a question of the consumption of irrigation water; in Europe and other countries where irrigation is not practised it is a question of the degree of protection or pollution of the water-supply. Shallow and unprotected wells are, therefore, a fruitful source of the disease. Renewal of the soil of a village as by a landslip or mud-slood has caused the disease to almost disappear, but it has risen again after a term of years [9]. A supposed goitre-producing water can often be rendered innocuous by the simple expedient of protecting it. The toxic agent of goitre does not long survive in the body of man, for removal from an infected locality is, as a rule, sufficient to cure any recent cases of endemic goitre. Continued infection is necessary, and not only so but a certain degree of infection, that is to say, a certain dose of the toxic agent is probably necessary to produce a thyroid hypertrophy. In some individuals this dose is comparatively small, in others it is very large, so much so that individuals frequently escape even in the most goitrous localities. It is not, however, because they have escaped infection, this is impossible where there is only one source of water-supply, and that goitrogenous. It is because of a

natural resistance to the disease, or, as I prefer to put it, the thyroid apparatus of such individuals is sufficiently active to withstand the attacks of the toxic agent of goitre. It has no need to hypertrophy to enable it to do so.

SEX AND GOITRE

Women suffer largely from goitre, much more so as a rule than men. This is due to the demands which are made on the thyroid apparatus of women by pregnancy, menstruation, and lactation. These physiological states act as predisposing causes to goitre in women. But males and females suffer in almost equal proportion up to the age of fifteen years in my district, and, according to Baillaige, up to the age of twenty-five in European countries [9]. After the age of twenty goitre is twice as common in women as in men. Children suffer very much more from goitre than is commonly supposed. In some villages I have found 65% of the children goitrous [10]. In a locality where the disease is commencing, children suffer more frequently than adults. Where the endemicity of the disease is high, children suffer in almost as large a proportion as do adults. The proportion of men, women and children affected in my own district is largely a question of the severity of the endemic. The proportion of men to women affected is less, as the severity of the endemic is low, and greater as the severity of the endemic is greater, becoming 1 : 1 in certain localities where the endemicity of the disease is very high. It is difficult to determine the part played by heredity—if any—in goitre, but there seems to me to be little doubt that the children of a goitrous woman are more likely to develop goitre than the children of a normal woman. This I have frequently observed in those so-called sporadic cases of the disease which one not uncommonly meets with in Europe. New-comers to a district are very liable to acquire the disease; in my own district I have been able to fix this liability at the definite figure of 20% [1]. It will probably be higher in localities where the endemic is more severe.

PREDISPOSING CONDITIONS

Certain conditions predispose to the development of goitre in endemic localities. I have referred to menstruation, lactation and pregnancy, other conditions which may be mentioned in this connection are emotional disturbances, such as fight, etc., attacks of fever, of rheumatism, of rheumatoid arthritis, and of infectious diseases. Bad hygienic conditions of life, especially limited air space, as where a number of people are collected together in one room, are factors of great importance, and are largely responsible for the "epidemics" of the disease which arise from time to time in barracks and schools. It will be remembered that the thyroid gland is concerned with the gaseous

exchange of the blood and tissues, and any additional tax on the function will necessitate its enlargement where goitrous influences are also present. There is with the thyroid apparatus as with the proverbial camel always a "last straw" which breaks the back of its normal activity. The thyroid has, however, the advantage of the camel, in that it can meet the added strain of extra work by undergoing hypertrophy.

It will be noticed that I have said nothing of dissolved ingredients in water or of its chemical composition as a possible cause of goitre. I have not referred to lime, magnesium, iron, iodine or the want of iodine, nor to the last substance to be accused, namely, radium [11]. Whatever may be the importance of any, or all of these as secondary factors, they are none of them the cause of goitre. A very hard water or a very organically impure water may possess an influence of a secondary nature, either by acting as a medium for the virus of the disease, or by setting up abnormal states of the intestinal tract which may favour its action [12]. Pure water, for example, is one of the most effective cures we have for goitre, and admixtures of highly goitrogenous water with a water of known purity inhibits the action of the toxic agent of the disease, if it does not actually destroy it.

I have not referred to the supposed influence of snow water since it has no foundation in fact. Water is a vehicle for the toxic agent of goitre and a vehicle only. Where the land is flowing with milk and honey, the mixture would prove an even more effective vehicle.

VARIATION OF INTENSITY

A few facts with regard to the disease as an endemic remain to be noted. The intensity of the endemic of goitre varies greatly in different countries, and in different parts of the same country. It is subject to periods of increase and decline. The increase and decrease is rarely uniformly progressive but is periodic. The endemic may disappear almost entirely from a place and only persist in isolated cases. This is usually due to the introduction of a protected water-supply. The isolated cases are found amongst those who do not drink the protected supply, or who are in other respects exposed to soil infection. The endemic may appear in places where it has been previously unknown. I have seen one very striking example of this [10]. In endemic localities one village may be affected and a similarly situated and neighbouring village free from it, and this though the water-supply is the same. I have explained the reason for this. In infected villages the occupants of certain houses or groups of houses may escape, this may be due either to a natural resistance to the disease or to the fact that they drink a pure water. Goitre shows a marked tendency to increase in an infected locality till

a point of maximum intensity for the locality is reached, when it gradually diminishes I believe this is due to the gradual development of an immunity to the disease.

Having given this brief résumé of such facts of the aetiology of goitre as have come under my personal observation during the past nine years, it becomes necessary, before I deal with the treatment of the disease, to give some description of the artificial production of goitre, of its development in the individual, and of the reasons which have led me to indicate the intestinal tract as the seat of infection.

THE TOXIC AGENT

From what has preceded it will have become apparent that the toxic agent of goitre is in suspension in goitrogenous water, and that, since boiling renders such water innocuous, the cause of the disease is a living organism. It is true that till this organism has been actually isolated, and the disease produced by it, it is impossible to definitely state that it is a living organism which causes goitre. Nevertheless, I believe it is, though I am willing to accept any proof to the contrary which will further the final elucidation of the aetiology of the disease. If the suspended matter of a goitrogenous water is separated by filtration through a Berkfeld filter, and administered to young men, it will be found that in Gilgit about one-third of the individuals experimented upon will show signs of thyroid enlargement on about the thirteenth to the fifteenth day of the experiment [13]. After about the fifteenth day the gland fluctuates considerably in size, being sometimes larger and sometimes smaller. About the thirtieth to the thirty-fifth day the organ reaches its height of enlargement, and it then begins to diminish, fluctuating considerably from day to day. In about 40% of such artificially produced goitres the gland returns to a practicably normal state under the conditions of the experiment. In the remaining 60% the enlargement persists, though usually smaller than on the thirty-fifth day of the experiment. The thyroid hypertrophy so produced I have observed the same course of events in goats also) seems to me, therefore, to run a definite course and the tendency on the part of nature is to cure [8]. This experiment has led me to conclude that the course of events in the development of what may be called a "first attack" of goitre is, under natural conditions, the same as under the artificial conditions of the experiment. Indeed, I have found it to be so from observations I have made in individuals suffering from incipient goitre. Now the resident in a goitrous locality is subjected to continuous infection through the water which he daily drinks—much in the same way as a resident in a malarial country is subjected to continuous malarial infection. As I shall presently show, the dose of infection is an important factor, and repeated

small doses may have a cumulative effect, for a stage is reached when the thyroid undergoes a further enlargement, and we have a "second attack" so to speak which leaves the organ larger than the first, and so on, or, the patient may have a "first attack" in spring or autumn, and recover from it during the summer or winter, only to have a "second," "third" or "fourth" during the succeeding springs or autumns. Further attacks of thyroid enlargement may be brought on by such predisposing factors as I have previously mentioned, much in the same way as a "chill" will bring on an attack of malaria in an infected person. The continued direct action of the toxic agent of the disease on the glandular tissue further gives rise to the formation of adenomata, and the dilatation of vesicles to cystic formations, and a stage is reached when the goitre is a mass of tumours or of cysts quite beyond the scope of any medicinal treatment. This, I believe, to be the sequence of events in the development of goitre.

THE INITIAL TRACT

The considerations which have led me to believe that the intestinal tract is the seat of infection are as follows—In the first place, since the disease is water-borne, the most natural seat of election for its toxic agent must be the intestinal tract. Secondly, I have observed certain blood changes in cases of endemic goitre which, although they cannot be said to be characteristic of the condition, suggested to me the possibility of a parasitic or bacterial invasion of the intestine. These changes are a deficiency of the polynuclear and an increase of the mononuclear elements of the blood together with a slight degree of eosinophilia [1]. Moroni has lately published similar findings, and has also drawn attention to a diminution of the haemoglobin index and of the red blood corpuscles [14]. Some of these changes are common to simple and exophthalmic goitre, and cannot, therefore, be employed as a differential test between the two maladies, as has been suggested by Kocher [15]. Thirdly, I found that the administration of intestinal antiseptics caused the disappearance of incipient goitres. I am chiefly concerned with the action of thymol in this connection, for, since it is not absorbed into the blood stream in the absence of its solvents, it must exert its beneficial action in the intestinal tract. Consequently, if thymol can cure goitre the causal factor of the disease must exist in this situation [12]. Now, it is well known that thymol will not reduce the bacterial flora of the gut by more than 1/10, it follows, therefore, that if the toxic agent of the disease is a bacterium, a reduction in the numbers of the organism is sufficient to ease the strain on the thyroid and to allow the gland to return to its normal state. Hence my reference to the probable importance of "quantity of infecting agent" in the intestine as an important determining factor in goitre. Of

larger organisms present in the intestinal tract of goitrous individuals I have found only, besides the common worms, organisms of the amoeba class, especially the so-called "harmless" amoebæ coli. This organism is very constantly present in the intestines of goitrous individuals in Gilgit [16]. Fourthly, I have found that by altering the bacterial flora of the gut by the administration of the *Bacillus Bulgaricus* incipient goitres rapidly disappear, a very striking proof of the presence in the intestinal tract of the infecting agent of goitre [8]. I have shown also that goitre can be readily and rapidly cured by means of vaccines. I have employed vaccines from various sources, but especially those prepared from organisms present in the intestinal tract of goitrous individuals. While I cannot attribute a specific action to any of these, nevertheless, the fact goes to prove my contention as to the seat of election of the infecting agent of goitre, as well as to demonstrate the antitoxic action of the gland. I have endeavoured to produce the disease in young men cured of their goitres by vaccination, but, though I have had these men under experiment for a period twice as long as the subjects of my former experiments, I have failed to notice any change in the thyroid except the gradual reduction in size of residual enlargements, which is commonly noticed after successful vaccination. I have experimented largely on goats with a view to the production of goitre by infecting their water supply with the faeces of goitrous individuals. The results of these experiments have certainly been of a positive character so far as a limited hypertrophy of the thyroid gland is concerned, my findings will shortly be published. But whether this hypertrophy is due to the transference from men to animals of the infecting agent of goitre I am not at present in a position to state. I believe that these considerations justify the conclusion as to the presence in the gut of goitrous individuals of a living organism responsible for the production of goitre.

OTHER CONDITIONS

Before considering the treatment of endemic goitre it is necessary to remember that there are, besides endemic influences, many other conditions which give rise to thyroid enlargements. In an endemic locality these conditions may favour the action of the goitrogenous influences peculiar to the locality, whereas, in a non-goitrous locality one or other of them may be of itself the sole cause of the enlargement. Amongst the most important of these conditions are puberty, menstruation, pregnancy, psychic factors, Graves' disease, some infectious diseases, notably rheumatism in children, and rheumatoid arthritis in adults, and disease of the gland itself. With the exception of Graves' disease, and organic disease of the thyroid gland itself, any undue enlargement of the thyroid,

which cannot be attributed to endemic influences, may be regarded as an evidence of an excessive strain in the thyroid apparatus. Where treatment is called for in such cases the indication is to administer thyroid extract in suitable doses, correct manifest disorders of health, and prevent intestinal intoxication. As an illustration of such a case I may mention that of a young lady who consulted me while in England with regard to a very evident goitre of some standing. She suffered from intense headaches and pronounced dysmenorrhœa, endemic influences could be excluded as a cause of the goitre. The administration of appropriate doses of thyroid extract caused a rapid disappearance of all the symptoms. I should like also to direct attention to the fact that goitre as a result of fright, great or prolonged mental stress, is not uncommon. These cases are not of necessity examples of Graves' disease, though the enlargement of the gland may be accompanied with tremors, some degree of staring eye, and increased action of the heart. Complete rest, the removal of the exciting causes, and the correction of unhealthy states of the alimentary tract are, as a rule, all that is necessary in such cases.

TREATMENT OF GOITRE

Bearing in mind the main aetiological facts concerning endemic goitre, and the sequence of events in the development of such a goitre in the individuals, we are in a position to approach the treatment of the disease in a manner in accordance with these facts. Medicinal agencies can only be employed with success in that stage of a goitre where the swelling is due to congestion or simple hypertrophy. Even in those later stages of the disease where tumour formation, fibrotic, cystic, or other degenerative changes have taken place, a variable amount of the enlargement is due to congestion or other unorganized changes, and this can be favourably influenced by medical means. But where such means fail to reduce the swelling operative procedures must be resorted to, if pressure symptoms are present, or where it is necessary to correct the disfigurement.

The indications for treatment of a case of simple goitre due to endemic influences are three (1) to prevent reinfection, (2) to destroy, or inhibit the action of the infecting agent in the alimentary canal, (3) and to promote absorption of the swelling. The first of these indications can be met either by removal of the patient from the endemic locality, or by boiling and filtering the water, while at the same time all other sources of soil infection are strictly guarded against. Vegetables should be thoroughly cleansed in pure water, so also should the hands and nails of those patients whose occupation brings them into contact with the soil. Cooking vessels should not be cleansed with a handful of soil or mud picked up

from the bottom and sides of kuls, this I have found to be a very fruitful source of infection amongst the troops in Gilgit, so much so indeed that the incidence of the disease was reduced more than one-half by attending to these precautionary measures. As a rule, the prevention of reinfection is sufficient to cause the disappearance of recent goitres.

The second indication for treatment can be met in two ways—(a) by administering remedies which assist or stimulate the protective resources of the body to combat the infecting agent, and (b) by the use of drugs which render the infecting agent innocuous, owing to their antiseptic action in the alimentary canal. Of remedies which act in the first of these ways the general tonics, arsenic, strichnine and phosphorus are of considerable value. Of more service, however, is thyroid extract, which is one of the most useful remedial agents we possess for the treatment of certain cases of goitre. Thyroid feeding acts in two ways in this disease. It supplies the excess of the active principle of the gland which is required, and, by so doing, it relieves the gland of the strain of excessive work, and gives it an opportunity to rest and regain its normal balance. To obtain the best results from this remedy the following points should be observed: (1) begin with a small dose, one grain night and morning, (2) always prescribe alkalines with it, (3) keep the digestive tract healthy, for if the intestines contain much organic acids the drug will not be absorbed, (4) watch the heart, and increase the dose gradually if no symptoms of thyroïdism are produced, (5) combine the thyroid extract with small doses of arsenious acid where there are signs of abnormal blood states. It is rarely necessary to prescribe more than five or six grains of thyroid extract during the day. This treatment is eminently suitable for European cases—especially so in women—who can observe the precautionary measures which are necessary to prevent reinfection. Where the disease has made its appearance for the first time in connection with menstruation or pregnancy, there is no remedy which is more beneficial than thyroid extract.

VACCINES IN GOITRE

During the past year I have been employing vaccines in the treatment of goitre with good results. A coliform organism grown from the faeces of sufferers from the disease has usually been employed for the manufacture of the vaccine. I give this vaccine in doses of from 150,000,000 to 300,000,000 at intervals of from seven to ten days, and I have found that five or six inoculations is all that is required to cause a complete disappearance of the swelling (Figs. I & II). In some recent cases as few as two inoculations are sufficient. This treatment is popular with the people as it does not involve the taking of medicines two or three times a day, and apart from the slight discomfort at

the site of inoculation for twelve hours or so, the patient is free to follow his usual avocations. A portion of the skin of the upper arm is painted with iodine tincture and the inoculation made without any further preliminary sterilization of the skin. An autogenous vaccine is on the whole more useful than a stock vaccine, but I have found the latter to act admirably. I cannot as yet attribute any specific action to the organism from which the vaccine is prepared. But so far at least as goitre is concerned, the efficacy of a vaccine does not depend on the specific nature of the organism from which it is prepared. I have employed other vaccines and in some cases with surprising results. Figs. III & IV show one of two cases successfully treated with a staphylococcus vaccine. The result could hardly be better. The staphylococcus was taken from a diseased femur in a non-goitrous individual. Three inoculations of 250,000,000 caused the bone to heal and the discharging sinuses to close up, while it took five doses to bring about the change in the goitrous individual shown in the figures. The action of vaccines is a matter which is still shrouded in mystery, and I do not propose to attempt an explanation of their action in goitre. All that seems to me necessary is to recognize that we possess in the thyroid apparatus a highly efficient protective mechanism against the attacks of toxic agents. Staphylococcus albus is certainly not the cause of goitre, yet a vaccine prepared from it can cure the disease. Whether other vaccines will have a like action or not I do not know as yet. I shall not be surprised to find that they have.

INTESTINAL ANTISEPTICS

Of remedies which render the infecting agent innocuous, by their antiseptic action in the alimentary canal, we have to consider iodine, intestinal antiseptics, and the lactic acid bacillus. Iodine has long been regarded as a specific for goitre, and I believe that its beneficial action is due to its powerful germicidal properties. The internal administration of iodine also leads to leucocytosis—a very desirable object to attain in goitre where there is usually a marked reduction of the polynuclear cells of the blood. Iodine can be prescribed in many forms both for external and internal use. I think it is best administered in the form of the tincture with the potassium salt five minims of the former to five grains of the latter, as recommended by Mr. James Bell (17) who gradually increases the dose till the patient is taking four or five times as much.

With regard to the treatment of goitre by intestinal antiseptics—notably thymol—(12) the drug is best administered in ten grain doses, in the form of a coarse powder, night and morning. An occasional purge should be administered. The usual precautions should be adopted to exclude solvents of the drug from the dietary, otherwise unpleasant results may follow.

A RÉSUMÉ OF RESEARCHES ON ENDEMIC GOITRE

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FIG I



FIG II



FIG III

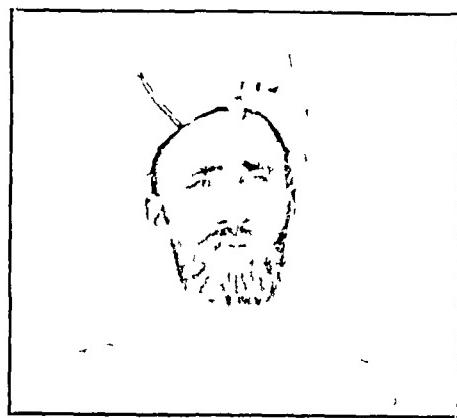


FIG IV



FIG V



FIG VI



FIG VII



FIG VIII

its use. Prescribed in this way thymol is entirely free from danger and can be consumed over long periods without the slightest ill effect. This method of treatment is suited to natives of the country as their dietary does not, as a rule, contain solvents of the drug which must be restricted, but for European cases some other of the remedies I have mentioned will be found more appropriate though not more efficacious. I have already referred to the etiological significance of the action of thymol. Beta-Naphthol and Salol may be employed in the same way as thymol, but they are not so reliable in their action.

THE LACTIC ACID BACILLUS

Since Metchnikoff introduced his method of antiseptizing the gut with lactic acid bacillus, I have been treating cases of goitre in this way, at the suggestion of Colonel W. R. Edwards, M.D., C.M.C. The results are highly satisfactory and cure has resulted in a large percentage of all cases treated (Figs V & VI). My cases are as yet few, but are sufficient to justify the mention of this method. I employ a culture of the *Bacillus-Bulganicus* in milk, one pint of the "soured milk" being given daily, half in the morning and half in the evening [8]. In all successful medicinal treatments of goitre, whether by iodine, thymol, lactic bacillus, thyroid extract or vaccines, the physician will observe one constant result. The patient will lose flesh, and there may be an increase in the pulse rate or other symptoms. These symptoms were formerly thought to be due to iodism. My explanation of the loss of flesh is as follows. The remedy directly or indirectly destroys or inhibits the action of the infecting agent or its toxins. The cause which initiated the thyroid hypertrophy is thus removed. The secretion of the hypertrophied organ is, therefore, no longer required to counteract the toxic substances produced by the infecting agent. But the enlarged organ cannot return to its normal size for many days, consequently, during the period of recession, an excess of thyroid secretion continues to be thrown into the blood stream. This excess gives rise to the usual phenomena which are observed when thyroid extract is administered by the mouth to a healthy individual. Slight symptoms of thyrotoxicosis are produced, metabolic processes are stimulated to an unusual degree, and the patient undergoes a loss of subcutaneous fat. The result is well illustrated in Figs V and VI, where lactic acid bacillus was the remedy employed. In the short space of thirty days the effects to be seen in the second photograph were produced.

ABSORBENT DRUGS

Some reference must now be made to those drugs which promote absorption of the swelling. Those which are most commonly employed for this purpose are the tincture of iodine, the

bromide of mercury ointment, and the epispasius. Of these the most useful is the "red ointment" which is so largely employed in India. This is a method of great use, and alone it frequently results in a reduction in size or disappearance of the swelling. But in my experience, the goitre so treated quickly reappears, and it is best to combine the treatment with the administration of one of the drugs I have mentioned. When these drugs have destroyed the toxic agent which gives rise to the swelling, the red ointment may be usefully employed to promote its absorption.

CURABILITY OF GOITRE

More than 90 per cent of all goitres which are suitable for medicinal treatment can be cured by the measures I have indicated in this paper. There is a small percentage of cases which, though they differ little in external appearance, are on examination of a firmer consistency than others of the same standing. Such cases often resist every effort to cure them by medicinal means. These, and chronic degenerated goitres, are best left alone or treated by surgical means.

The prophylaxis of goitre is simple for those who can have access to a drinking-water of known purity. But for those who cannot—and this is the rule in most goitrous localities—it becomes a question of the provision of such a water, supplied to the consumers in a manner which precludes all possibility of contamination. It is true that this is a task of the greatest magnitude in a country such as India. But when it is remembered that goitre is fraught with the gravest danger to the race [18], that it gives rise to forms of the grossest mental and physical degeneration—cretinism, deaf mutism, etc.,—that it results in the propagation of a race as grotesque and stunted as it is pitiable and helpless, the necessity for attempting the task of prophylaxis will be realized. As Saint-Lager wrote in 1867: "si le goitre endémique est le premier symptôme d'un empoisonnement qui peut conduire l'homme de degrés en degrés à l'abutissement le plus abject, ne doit-on pas accorder à cette tumeur une des places les plus importantes dans le cadre nosographique? Est-il une maladie plus horrible et plus digne des préoccupations des philanthropes que celle qui prive l'homme de l'intelligence, le seul attribut qui nous élève au-dessus des bêtes?"

[4] That this description is no exaggeration the accompanying photographs of cretins will show. The woman is thirty-five years of age and some three and a half feet high, the "man-child" was twenty-five years of age when this photograph was taken. A cretinous idiot, deaf, dumb, paralysed and utterly helpless.

DESCRIPTION OF FIGURES

Fig. I.—Parenchymatous goitre said to be of about one year's standing—small tumour mass in

isthmus about the size of a nutmeg Neck measured 42 centimetres

Fig II—The same subject after treatment by vaccination with stock vaccine prepared from coliform organism Patient had seven inoculations, doses varying between 150 to 300 millions Measurement of neck 37 centimetres, an interesting feature of this case is the very marked diminution in size of the small tumour mass in the isthmus It is now not larger than a small hazelnut

Fig III—Parenchymatous goitre said to be of about one year's standing Neck measured 39 centimetres

Fig IV—The same subject after treatment by vaccination with a staphylococcus vaccine—source of staphylococcus was from a case of caries of the femur Patient had five inoculations at intervals of seven to ten days Doses of vaccine varying between 250 to 500 millions, measurement of neck after cure 36½ centimetres

Fig V—Parenchymatous goitre said to be of about six months' standing, treated with "soaked milk" 14 oz daily

Fig VI—The same subject thirty days later Attention is directed to the marked loss of subcutaneous fat in this case The same result is apparent in the other two cases (Figs II & IV) but to a lesser extent All the patients shown in the figures followed their usual avocations

Fig VII—Goitrous cretin female, aged thirty-five, height 3½ feet, deaf-mute, some spastic paralysis of the limbs

Fig VIII—Male cretin non-goitrous, aged twenty-five, idiot, deaf-mute, severe spastic paralysis upper and lower limbs, nystagmus, exhibits nervous symptoms described me [18] in very pronounced degree

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OPERATION THEATRE WITH ACCOMMODATION FOR 20 STUDENTS

BY W G KING, CIE,

COLONEL, I M S (Retd.)

(Continued from No 6, June, 1910, Indian Medical Gazette)

THIS operation room is intended for use at a hospital with a medical school attached It consists of ground and first floors The general arrangement is such that provided it can be made to face the north, the block can be made in off-shoot from any existing verandah on the first floor Further, provided the operation room can be made to face the north and when first built be limited to one operation room, it ought to be possible to add another operation room to the west, and thus economise the accessory rooms—as practised in certain new hospitals in Germany, although a duplication of some and rearrangement of others would be desirable

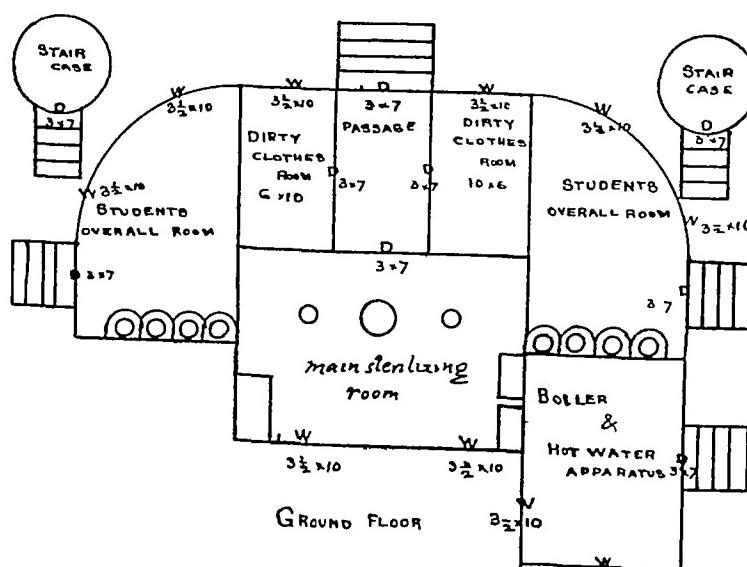
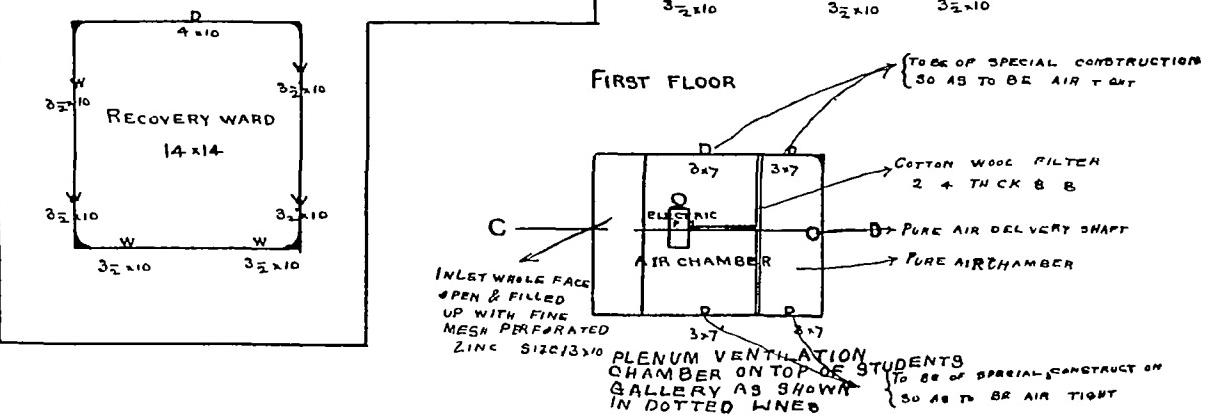
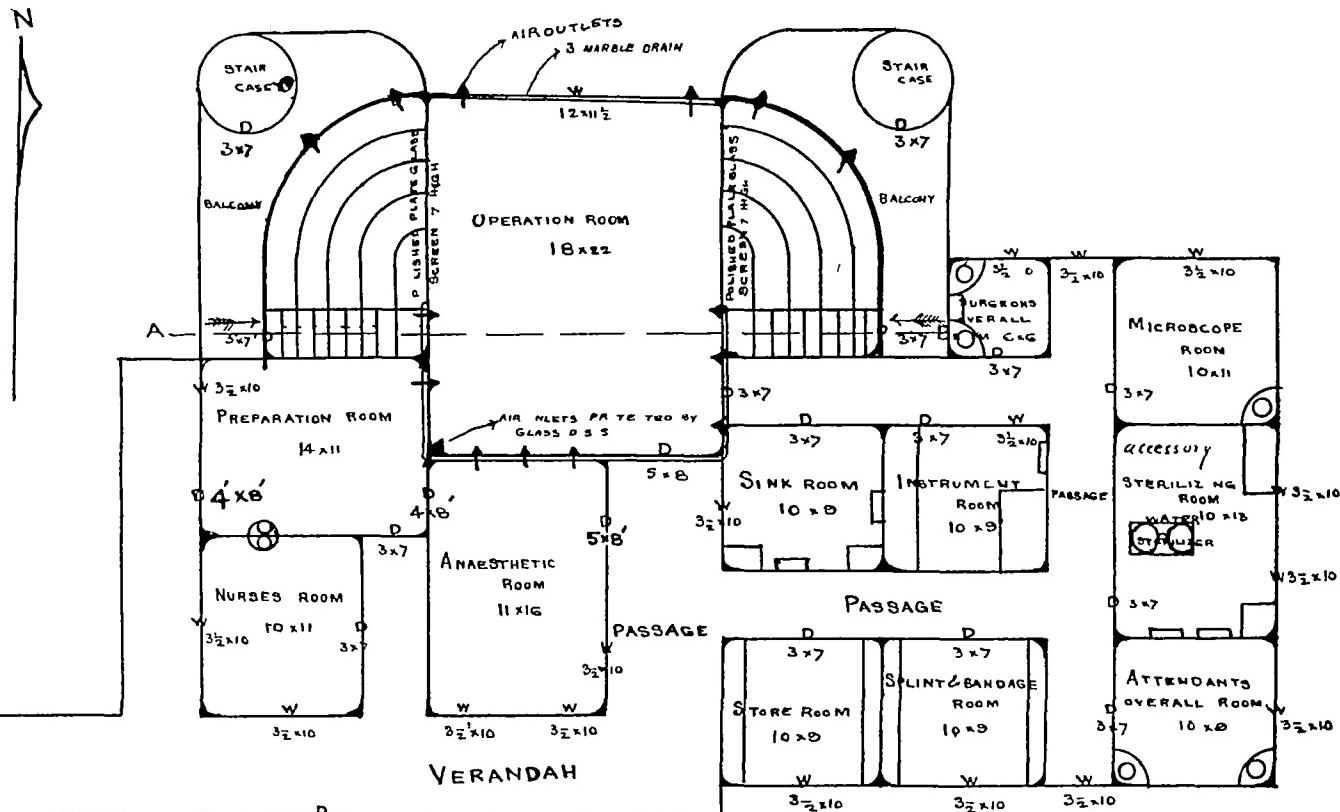
The structure will be of good brick or stone masonry Where continuous walls are not shown on the groundfloor, it is assumed that the structure will be supported on open arch masonry

Height of Walls—All walls are to be 14 feet high from the floor to the ceiling level

Operation Room—The operation room (if the rather strained estimate of the limit of usable air of 14 feet be adopted) affords initial space of 79 2 square feet and 1,119 cubic feet per head for the 5 adults (including the patient) concerned in a major operation, which would suffice for an purity if natural ventilation be trusted to But, irrespective of it being desirable to secure an free of dust by filtration in an operation room, the necessity for accommodation for students must dictate the use of plenum ventilation, unless great initial expenditure for space be undergone The leading principle in the use of this method in this case, is to so introduce the air that, although it is reckoned the air contents of the room will be completely changed ten times per hour, the velocity (5 feet per second) at the points of admission shall not be disagreeable to the inmates Consequently, nine points of air admission have been selected—each 11½ inches in diameter These will be seen to be marked by arrows on the south wall and put of the east and west wall Four exits will be found behind the galleries of the students (11 inches diameter each) and two exits close to the edge of the main operation window (16½ inches diameter each) These will be under the influence of extract ventilation Under this arrangement, it is anticipated that the plenum air will be introduced so as to proceed in current of a fan shape, and thus include the particular position in which the patient and the operation staff will be present, in the first part of its course, and that, in its subsequent career, so much of it as does not go direct to the outlets at the side of the windows, will proceed to outlets in the walls of the students' galleries In this manner there will be secured for the operating

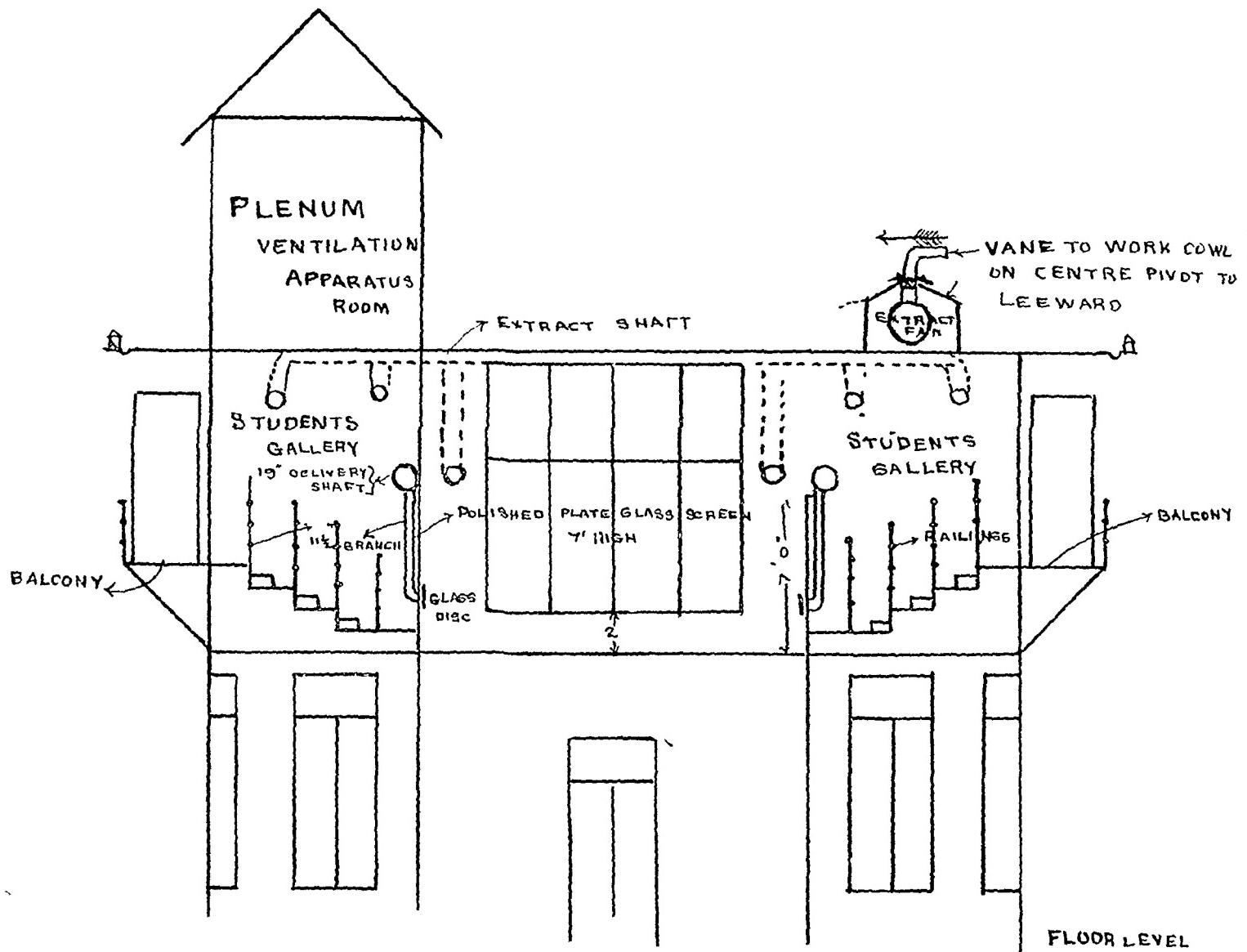
OPERATION THEATRE WITH ACCOMMODATION FOR 20 STUDENTS

BY COLONEL W G KING, CIE, IMS (Retd)



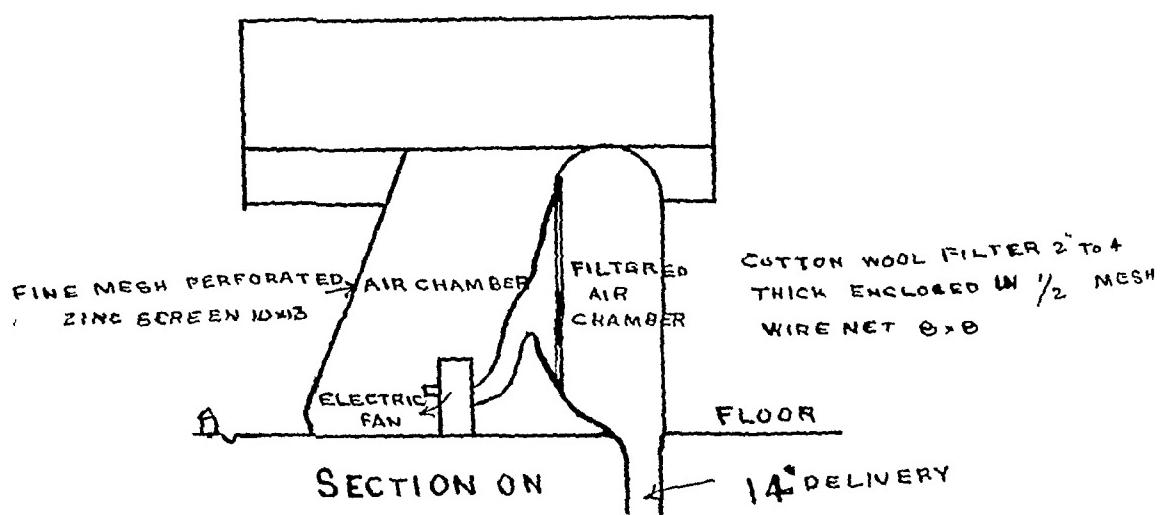
OPERATION THEATRE WITH ACCOMMODATION FOR 20 STUDENTS

By COLONEL W G KING, CIE, I.M.S (Retd)



SECTION ON AB

ALL CIRCULAR OPENINGS
SHOULD BE PROTECTED BY
REVOLVING GLASS DISCS
WHEN NOT IN USE



staff and patients air of high purity, whilst the students, by reason of their enjoying less square and cubic capacity per head and being supplied by already partially used air, will obtain it of an inferior grade of purity. Thus, the operating staff and patient will theoretically get the best part of an air-change of ten times per hour (instead of three times under natural ventilation) whilst the students whose initial cubic space is only about 168 cubic feet (allowing for average height from the gallery to the ceiling) will have the small air-change of 1,680 cubic feet per hour. The total area of outlets is about 14 per cent less than that of the inlets, and this offers sufficient opposition to an egress as probably to produce some increase in pressure in the interior of the room, and thus prevent entrance of air (with its danger of dust) from the exterior except after tiltation. Of course, it would be better to give to the students air of better purity than here indicated, but then sojourn is but temporary and they are supposed to be healthy, and not struggling with the shock of an operation and a system charged with chloroform. In this way then, room is allowed for 20 students—that is, ten on each side. They will be separated from the working space of the operation room by a polished plate British glass screen, with as few junctions as feasible, extending from the floor to a height of 7 feet. This should suffice in the presence of plenum ventilation, with a current (duced by extract ventilation) going over the screen and the heads of the students, and therefore away from the patient and operating staff, to prevent microbe-bearing dust from these and visitors passing into the operation room.

In regard to the rapidity of air-change (10 times per hour) it must be remembered that the heated air of the tropics is dealt with, and not the variable air temperatures of Great Britain. The mode of air in suction through a chamber on the roof in the primary stage of plenum ventilation would lend itself to such crude methods of temporary air cooling as the use of blocks of ice, if complete cooling apparatus arranged for definite temperatures cannot be afforded.

Students' Gallery—The walls of the gallery should be protected by white marble slabs up to 8 feet. No seats will be allowed; the students will be expected to stand. The rails shown should be of iron tubing, aluminium painted, although if it can be afforded, white Porcel steel as made by Messrs Arnold and Sons, London, would be preferable.

Operation Room Window—There will only be one window in the operation room, namely, that to the north. This will extend from 6 inches from the ceiling to 2 feet from the floor, and would have a total area of 12 feet by 11½ feet, as made by Messrs Hope and Sons, Lionel Street, Birmingham.

In the rare event of the artificial system of ventilation going out of order at any time, it would be necessary to open the central casement

of Hope and Son's window,—which as previously stated is purposely arranged to meet this contingency—and to require the students to leave the room without delay. The conditions for air purity would then be met by natural ventilation,—aided, if necessary, by opening one or other of the two doors.

Plenum Ventilation—The air plenum fan is placed under a shelter on the roof in a special chamber. This is open to the air at one end, by means of a perforated metal screen which should prevent admission of coarse particles of dust. The fan after drawing air through the screen into the interior of the chamber, will force it through a cotton filter of 6½ square feet area and of from 2 to 4 inches in thickness. The cotton-wool is laid lightly and continuously packed between two layers of ½ inch wire mesh. The screen should be made in such sections as will enable the cotton-wool to be easily removed for sterilization or replacement. After passing through the filter, the air is forced through a shaft of 14 inches diameter, at the rate of 1,500 feet per minute and passing through a shaft of 19 inches diameter will be discharged at the rate of 800 feet per minute, so as to reach the nine inlets in the operation room at the decreased velocity of 5 feet per second or 300 feet per minute. The whole system provides for curves being formed instead of angles, wherever change of direction or junction is made. The 19" shaft will pass round the south, east and west walls above the level of the doors, and at the points shown as inlets, the air will descend from it in smooth lined tubes of 11½ inches diameter terminating in the wall with a gentle curve at two feet from the floor level, but with their mouths flush with the wall and guided, when not in use, by Ching's (Comis Ching and Co., London) rotary glass discs.

Extract—The position of the extract openings has already been described. They would open into a common shaft to an opening protected by a cowl, so arranged that it shall not face the wind. The fan is protected by a simple wooden shelter with a sloping lid, which can be removed for inspection or repair.

Power—Both fans would preferably be worked by electric motors, but, if electricity is not available, small gas engines of a little over 1 h.p. can equally well be used, if care be taken in the plenum ventilation arrangement that the pipe for consumed gas be made to discharge at a distance.

The plenum fan should have a diameter of 12½ inches and the extract should be 10 inches. Preferably, the Keith fan obtainable from Messrs James Keith and Blackman and Co., should be employed.

GENERAL REMARKS.

Details as to structure have been given in the June number, 1910, of this Journal, but it is to be noted that methods of sterilization by steam under pressure from a central boiler and the use

of a low pressure hot water-supply, as there suggested for the largest class of operation rooms, we here applicable. This differentiation sounds expensive, but as in practical working the necessity for sterilization and the use of hot water are not always synchronous, the arrangement is in reality economical of recurring charges.

It should be remembered that otherwise than for cleansing and disinfection, and for actual operations, the operation room should not be entered by any person, and even they only after they have got rid of their coats, and have donned sterilized overalls and sterilized foot coverings, in the attendants or surgeon's overall room. No exception should be made on behalf of the "distinguished stranger" in this respect. This rule is facilitated by the accessory rooms being so arranged as to be approached without using the operation room as a passage.*

To maintain the necessary grade of cleanliness, students would be expected to proceed, in the first place, to the rooms provided for them in the ground floor where they would change their clothing in one room, cleanse themselves, and assume sterilized overalls in another. They would then reach the operation room by special doors in the gallery wall.

THE DIVISION OF THE SUSPENSORY LIGAMENT OF THE LENS, AS A PRELIMINARY TO INTRA-CAPSULAR EXTRACTION OF CATARACT

BY V. NELSFIELD, F.R.C.S.,

CAPTAIN, I.M.S.

IN July 1909, I wrote a short article in the *Indian Medical Gazette*, concerning the division of the suspensory ligament of lens, as a preliminary to the intra-capsular extraction of cataract.

At the time I had only done this operation a few times, and was not quite sure of the value of the method.

Since then, I have carried out the modification over 50 times on cataracts in Assamese, and over 100 times on normal eyes on the devil subject, both English and Assamese.

I now feel confident in stating, that it is a simple matter to divide the lower segment of the ligament, that it is a safe operation, and greatly simplifies intra-capsular extraction, especially in those cases where more than moderate external pressure fails to dislocate the catarractous lens in its capsule.

* I see in an interesting article by Major Gabbett in the *Surgical Number* for 1910, he advocates the sterilizing room being placed next to the operation room and communicating with it by a hatch door. The plan is that an unforeseen instrument might be necessary, and should be sterilized. If, however, an instrument is so required, its safe sterilization cannot be affected by the seconds of time thus gained, whilst the complete separation of the accessory sterilizing room and yet keeping it within easy approach, seems to me to offer advantages in many respects as to administration that should not be sacrificed. W.G.K.

Lieutenant-Colonel Smith, I.M.S., and those who follow his methods, lay very great stress on the correct observance of various points of technique. They state that the operation is a simple matter when these details are carried out. I have carefully followed all the directions, and do not find that these little points make such an enormous difference.

Now it is obvious that there must be two main stages in intra-capsular extraction.

(1) The rupturing of the suspensory ligament (of the lens) with consequent dislocation of the lens in its capsule.

(2) The extraction of the dislocated lens.

It is only in the first stage that Colonel Smith's procedure differs from the ordinary cataract operation, also, because the encapsulated is larger than the denuded lens, he uses a longer corneal incision. I consider it is the first stage in Colonel Smith's operation which causes the difficulty. The ligament frequently does not rupture, and hence the lens remains imbedded.

Sometimes the ligament is so frail, that it is ruptured on opening the anterior chamber, the lens immediately presents, and extraction is a simple matter.*

Colonel Smith ruptures the ligament, by pressing somewhat strongly backwards, with the point of a strabismus hook, placed on the lower part of the sclero-corneal junction. Should this fail, he recommends pressing backwards, and then running the instrument downwards towards the lower lid as the result of such pressure, one of three things happens—

1. The ligament ruptures (the lower part only).

2. The ligament fails to rupture.

3. Both the ligament and the hyaloid membrane rupture.

From *post-mortem* observations I find, that the strength of the ligament varies markedly in different subjects. In children it is very strong, and any tear produced remains localised. By external pressure alone it is quite impossible to rupture the ligament, without also bursting the hyaloid, and disorganising the eye.

If a segment of the ligament be divided by means of a special instrument introduced into the anterior chamber, it is quite impossible to continue the tear circumferentially by external pressure.

It is only after dividing three-fourths of the ligament that the lens can be extracted (by somersaulting). It was by noting the force required to turn the remaining quarter (attached to the upper border of the lens), that I have estimated the strength of the ligament.

In subjects between 20 and 30 years of age the ligament is still very strong, and it is quite

* Wundrem of Seattle, U.S.A., suggests that Colonel Smith revised and copied Preyschacher's operation of 1865. There seems to be no ground for this statement. It is far more probable that involuntary intra-capsular extractions led him to elaborate his operation.

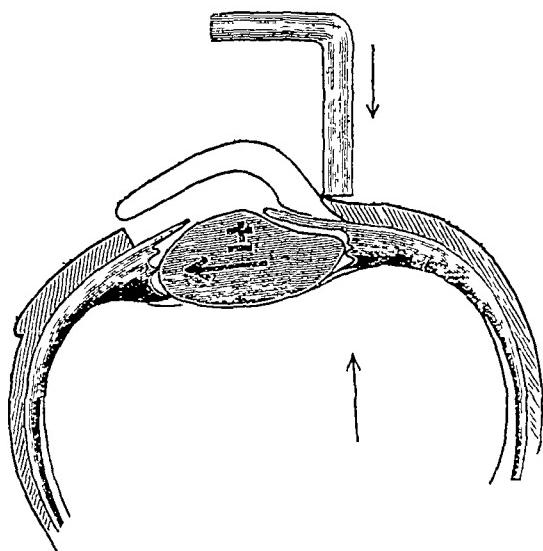


FIG I SOFT LENS—The surface becomes indented, and hence no pull is exerted on the Sus Lig

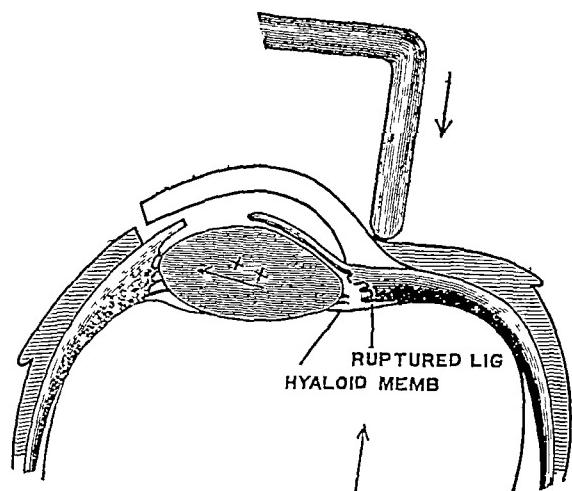


FIG II HARD LENS—Allows show lines of Force
A distinct pull is exerted on Lower Segment of Sus Lig

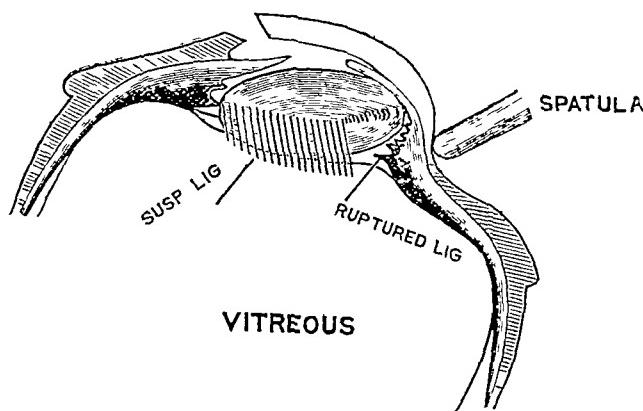


FIG III POSITION LENS takes up after division of Lower Seg
ment of Sus Lig Spatula in first position for Some resulting

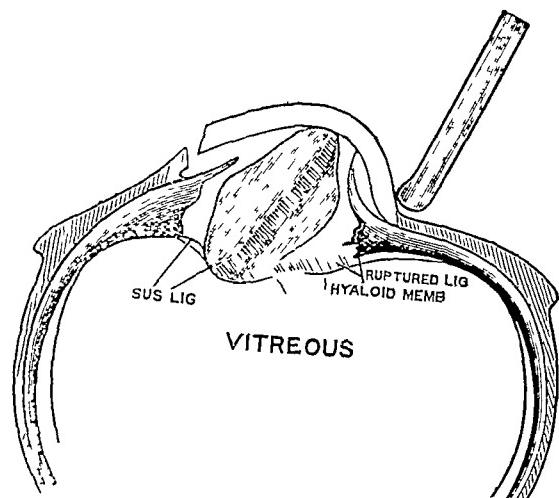


FIG IV LENS IN SECOND POSITION OF SOMERS
SAULTING Greater part of Sus Lig torn

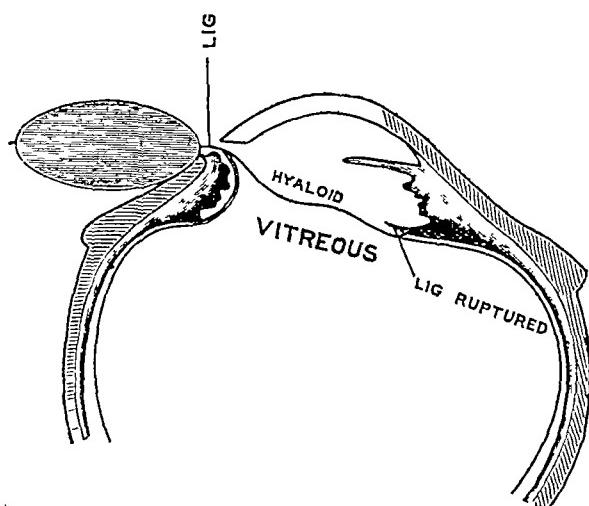


FIG V LENS TURNED UPSIDE DOWN Lower portion
Sus Lig torn Upper portion still intact

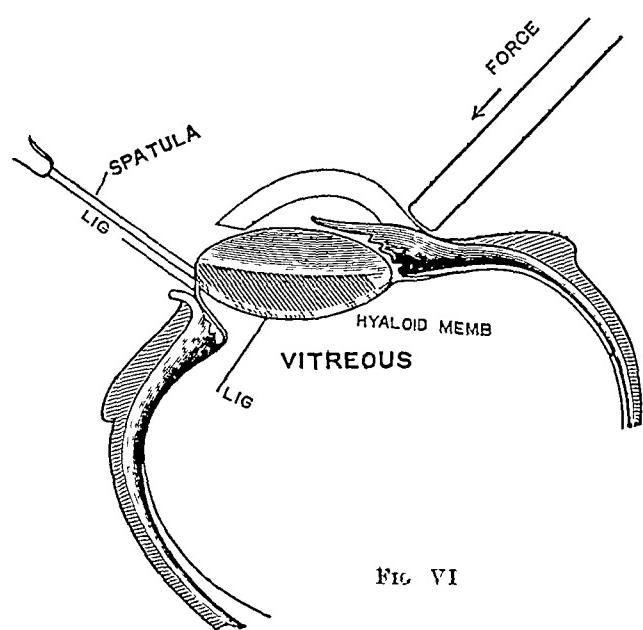


FIG VI

impossible to rupture it by external pressure, but a tear in it tends to spread more readily.

Even at the age of 70 with clear lenses, the ligament cannot be ruptured.

I was only able to succeed once on the dead subject, a man of 74 with yellow lenses. From those *post mortem* observations, it appears that cataractous degeneration of the lens is accompanied by degeneration and weakening of the suspensory ligament. It also seems clear that the success of the first stage of Smith's operation depends not only upon the weakness of the ligament, but also upon the consistence of the lens.

Figs 1 and 2 explain what appears to me to be the manner in which the force applied to the cornea ruptures the lower segment of the ligament.

The pressure on the cornea anteriorly, and the counter-pressure of the vitreous posteriorly, tend to squeeze the lens towards the corneal opening, and thus to exert a pull on the lower segment of the suspensory ligament. This pull can only be exerted, when the lens is hard and resistant. When the lens is soft its anterior surface indents, and thus no expelling force is exerted.

In consequence of the release of the lower border of the lens, this edge tilts forwards, and the remainder of the ligament is torn during the subsequent manipulation.

My experience with extract cases has been that it is impossible to bring off Smith's operation in five cases out of six. My patients have been mostly Assamese, and it may be that their lenses are softer, or their ligaments stronger than those of the up-country man or the Madrassee.

I can give no explanation, unless it be, that trachoma is very uncommon in Assam, and very common in the Punjab.

It was because I experienced such difficulty in extracting the lens in its capsule, that I tried to simplify and render more certain the first stage by dividing the lower segment of the ligament, with an instrument passed into the anterior chamber. The modification over the old operation is very slight, in place of dividing the capsule of the lens, the suggestion is to carry the cystotome a little further, and divide the ligament instead.

By means of this very small manoeuvre, it is possible to deliver the lens in its capsule in almost every case (living subject).

The efficacy of the method can be readily proved on the dead subject. With a little practice, it is quite easy (in a subject over 30 years of age) to extract the normal lens in its capsule without the escape of vitreous, as stated above, this is quite impossible if external pressure alone be applied to the cornea. On a number of occasions (on the dead subject) Captain H. J. Burgess, M.S., tried to extract the lens employing Smith's technique, but failed. He then allowed me to divide the ligament; the lens now came out readily in its capsule.

To prepare the special instrument for dividing the ligament

Take a piece of silver wire $1\frac{1}{2}$ " long and about $\frac{1}{8}$ " cross section. At one end make a small oval loop, take a glass tube, and draw out one end to a point, run the wire down the tube, so that the straight limb projects from the narrowed end of the tube. Pull the wire through, till the oval loop impacts (in the narrowed point of the glass tube).

Now hold the point of the glass in a flame till it fuses on to the silver wire.

Bend the extreme tip at right angles, and in a plane at right angles to the loop, so that when the plane of the loop is horizontal, the point of the wire will be vertical.

With a chisel, cut off cleanly the tip of the wire, so as to bevel it, and give the point a cutting edge.

The bevelled surface must look towards the handle of the instrument. The right angled limb must not be more than $\frac{1}{8}$ " long.

The rounded end of the bend must be smooth, so that it cannot injure the ciliary body when in position, and there must be no tags, in order to prevent injury to the capsule.

The Operation

I use atropine and instillate with cocaine and adrenalin. The eyelashes are cut, and the eyes washed with 1 in 4,000 perchloride of mercury, this not only kills the pyogenic organisms, but coagulates mucus, and allows its easy removal. Shortly before operating, boric lotion is used to remove the mercury. I find boric lotion 1 in 60 kills staphylococci in 15 minutes at 90%. 1 in 4,000 perchloride of mercury in 30 seconds. I use a spring speculum fixed with a screw. Nervous patients are given half a drachm of tincture of opium.

The patient is told to look downwards and the cornea incision which includes half the corner is made. The speculum is retained, but held by an assistant away from the eye. The patient is directed to look at the ceiling, the eye is fixed with the left, and the special instrument passed with the right hand, so that the cutting point is turned sideways.

The instrument glides over the anterior surface of the upper segment of the iris, across the pupil, and under the lower segment of the iris till the bent end reaches a position behind the ciliary body. It is a very simple matter to observe the end of the instrument, as it glides under the iris.

The cutting point is now turned so as to look backwards. The point is very carefully and slowly made to meet the outer edge of the lens to the left for a distance of one-eighth inch. It is now brought back to the centre, and the division of the ligament continued for one-eighth inch to the right. The point is brought back again to the centre, and is turned sideways, and the instrument removed. If the manoeuvre has been successful, the lower edge of the lens

will be seen to tilt forwards, and to press against the iris.

When in doubt, pass the instrument again.

A small iridectomy, not including the base of the iris, is now done.

The extraction of the Lens

As some patients screw up their eyes, I leave in the speculum, but it is held forwards by an assistant so as to remove all pressure from the globe.

The patient is directed to look at the ceiling, as I consider this, and not the upward position is the resting state. In deep anaesthesia, and in death, the eyes take up this position (*i.e.*, towards the ceiling when on the back).

With a tortoiseshell spatula held in the right hand for the left eye, and the left hand for the right eye, the lens is pressed from below to the corneal opening. If this fails to deliver the lens, the patient is directed to look a little downwards, and counter-pressure is applied by means of a spatula placed near the margin of the divided sclerotic.

If this also fails, the point of a blunt striabismus hook is placed on the sclero-corneal junction (below) behind the lens, and the lower border (of the lens) is tilted forwards, counter-pressure being maintained above. As the lower border of the lens tilts forwards, it is encircled by the angle of the hook, and the tilting process is continued, till the lens is completely turned upside down, so that what was the posterior surface, now becomes the anterior. Figs III, IV, V.

The lens will now be found to appear through the incision, with the original upper border still held by the intact upper segment of the ligament.

The reason for the Somersaulting

Though the lower quarter of the suspensory ligament may have been divided by the special instrument, the tenia may fail to extend round to the remaining $\frac{3}{4}$ of the ligament. It is this intact portion which obstructs delivery in the normal position. Fig VI.

During the process of somersaulting, the tear in the ligament below spreads round the circumference of the lens, *vide* Figs III and IV.

There need be no fear that the lens when turned on its edge will rupture the hyaloid, because, not only does the encapsulated lens become flattened, but also the corneal incision gapes widely, and thus relieves the pressure.

Occasionally the special instrument fails to tear the lower segment of the ligament, this is usually due to the shift of the instrument pressing the whole body of the lens backwards. This failure may not be detected until delivery is attempted, and is then only recognised by the lens refusing to somersault, under these circumstances, the instrument should again be passed, while a little pressure is applied to the globe, so as to bulge the vitreous and bring the lens forward.

The firm and the soft lens in relation to the ease and the manner of delivery

A firm lens can nearly always be delivered in its natural position, because it can be more easily pushed towards the corneal opening, and for the same reason, the suspensory ligament strips away from it. Fig VI.

When the lens has been well advanced, but its further progress is obstructed by the upper portion of the ligament, this can be torn through, by placing a spatula on the ligament over the bulging vitreous, and under the emerging lens, further pressure from below tears the ligament against the lip of the spatula.

With a soft lens, no propulsive force can be exerted by pressure from below, as the lens indents, hence the absolute necessity of some assaulting.

Special points and difficulties

(1) In place of cutting the ligament by mistake the capsule may be divided, and the lens appears without its capsule.

The capsule may burst during delivery. It can generally be washed out, and little tags picked out with iris forceps during the washing.

(2) Sometimes hernial protrusions of vitreous may be seen to emerge from between the fibres of the upper portion of the ligament when delicate pressure is employed. When the protrusions are quite small, the lens should be somersaulted, when large, the capsule should be divided horizontally, and the lens delivered by means of a spoon passed behind the lens.

This should also be done if vitreous escapes.

(3) Sometimes the lens, when one-third delivered, sticks and cannot be moved further. If this is due to the corneal incision being too small, it should be enlarged with blunt-pointed scissors, or, the protruding lens should be grasped with fixation forceps. The capsule bursts and on traction, it is withdrawn with the lens (some milky fluid is usually discharged).

(4) Never attempt to divide the upper segment of the suspensory ligament in the gap produced by the iridectomy as the result is disastrous.

(5) Blood in the anterior chamber I leave alone, it becomes absorbed in four or five days.

After Treatment and Dressing

The eye is washed out with boracic lotion, and gauze dipped in 1 in 4,000 perchloride of mercury applied (over the closed lids), this is covered with oiled paper or piece of plantain leaf. Wool is applied, and many turns of a bandage, which is sewn on. Only one eye is covered to allow the patient to feed himself and get about.

The patients usually walk home to quarters near the dispensary.

Next morning the eye is washed out with 1 in 4,000 perchloride lotion and wet dressings again applied. The patient is dressed in this way daily for seven to ten days, and then discharged with a shade.

The sight is usually good on the 10th day.

AVERAGES OF WEIGHT AND CHEST MEASUREMENTS OF 705 MADRAS COOLIES

By BURTON NICOL, F.R.C.S. (Eng.), D.P.H. (Cumb.),
Medical Superintendent, Indian Immigration Trust Board
of Natal

OBSERVATIONS of height, chest measurement and weight of 705 male emigrant labourers were taken at the Natal Government Emigration Depot, Madras, in order that averages might be worked out which would afterwards be of assistance in the medical examinations that are made before the coolies are sent to Natal. It was found that a considerable range of variability in weight and in chest measurement might be present in men of a given height without any departure from health. The averages have been of use in examining emigrants, but it has not been found possible to set up a rigid standard of weight or chest measurement and this has not been attempted.

The table which follows is self-explanatory *

Number of men examined	Height	Average weight	Average chest measurement
39	5 ft 0 in	103 lbs	31.2 in
48	5 ft 1 in	105 lbs	30.8 in
76	5 ft 2 in	107 lbs	31.4 in
89	5 ft 3 in	110 lbs	31.1 in
111	5 ft 4 in	113 lbs	31.8 in
134	5 ft 5 in	115 lbs	31.7 in
80	5 ft 6 in	119 lbs	32.2 in
67	5 ft 7 in	121 lbs	32.4 in
33	5 ft 8 in	126 lbs	33.0 in
17	5 ft 9 in	130 lbs	33.2 in
11	5 ft 10 in and over	130 lbs	33.5 in

The chest measurement was taken across the nipple line with the thorax at rest in the position of expiration.

Tamils and Telugus are represented in the above figures in about equal numbers. The majority of the Tamils come from the North and South Arcot districts, the majority of the Telugus from the districts of Coconada and Vizagapatam. The Telugus are superior to the Tamils in physique, being as a rule taller, heavier and having a larger chest measurement.

About a third of the total number were 5ft 4in or 5ft 5in in height and more than half of them were from 5ft 3in to 5ft 6in in height. In the last line are included two men, one of whom was 5ft. 11in and the other 6ft in height, their chest measurements were 36in and 34in and their weights 158 lbs and 151 lbs respectively.

The range in weight was considerable, the men of 5ft 4in in height ranged from 94lbs to 128lbs, while those of 5ft 5in ranged from

96lbs to 135lbs, at the latter height 96 out of the 134 men were between 110lbs and 120lbs.

The age of the men upon whom these observations were made was between 18 and 40 years. The average age would be about 23 years. They are all of the agricultural coolie class, and on admission to our dépôt are usually in bad muscular condition. Their weights are taken on their arrival at the dépôt and again at a later date. In a few weeks, the abundance of food and the complete freedom from work makes a considerable difference in their appearance. Those who are in health put on weight rapidly and their skins take on that smooth, shining appearance that indicates good health.

The chest development leaves much to be desired. At 5ft 4in and at 5ft 5in the range is from 29 in to 34 in. No attempt was made to obtain figures shewing power of chest expansion. The average coolie labourer from the mofussil does not indulge much in deep costal breathing. What deep breathing he does is carried out by the use of diaphragm and abdominal muscles, and he is almost unable to expand his chest beyond a very slight degree.

Scoliosis is not uncommon, and in some cases marked dorsal hypnosis due to weight carrying is observed.

If compared with European standards the above averages of weight and chest measurement will not look at all well. These men are, however, wiry and muscular and are capable of sustained effort on what would seem to us, a very insufficient diet.

A Mirror of Hospital Practice

SOME OBSERVATIONS ON HYDROCELE

BY T. H. FOULKES, M.R.C.S.,
MAJOR, I.M.S.,
Civil Surgeon, Wallah

IT may seem that the subject of hydrocele is worn somewhat threadbare in India, but two points in connection with it have been rather forced upon my notice lately and seem sufficiently novel to be worthy of remark.

In the first place, in cases coming for operation, I have been struck by the frequency in which the opposite testicle to that diseased, has been operated upon some months or years previously. This to suggest that hydrocele is far more often bilateral than unilateral, and on examining cases from this point of view, I have found, with the aid of a diagnostic sign described below, that when the tunica vaginalis on one side is much distended then, in nearly every case, an early hydrocele may be diagnosed on the other side, which would not be discovered but for this physical sign.

* See Note below p. 203

As far as I am aware this sign has never been described, but, as it is very simple and straightforward, it is possibly known to many. Since, however, I have met no one who knew of it, I venture to publish it as it will be found extremely useful and characteristic.

It is elicited as follows—

The hydrocele is grasped firmly tightly in one hand, in the same way as it is grasped for observing translucency—it may be remarked in passing that translucency is difficult to obtain with a deeply pigmented scrotum—an attempt is now made to pinch up the tunica vaginalis, as this pinching is attempted the grasp of the squeezing hand is gradually slackened and, as the slackening goes on, the finger and thumb at some point will feel the tunica vaginalis pinched and then the tunica will be felt to slip away. Usually the best place to pinch is straight in front of the testis, but often it is easier to pinch up the tunica near the lower pole.

In the case of very small hydroceles, one pinches gently the body of the testis between the finger and thumb in such a manner that the testis will slip away as it slips the tunica will be found to remain between the finger and thumb, and then in its turn to slip away. The tunica cannot be pinched up off a normal testicle.

Obviously this sign cannot be elicited if the sac is very thick, or if the fluid inside is at very high tension, but it is available in the great majority of cases.

The advantages of this sign are more than merely diagnostic. It enables one to locate the testis and generally to estimate its size by pinching around it. It enables one to feel the thickness of the tunica vaginalis and incidentally its probable vascularity and so to make up one's mind whether to make a very small hole in it and merely evert the sac, or to have a threaded needle handy to stitch back the sac in which a larger opening is required. It also allows of the detection of a commencing hydrocele which cannot be diagnosed in any other way and so enables an earlier operation to be done, which is then a very simple matter. The sac can be pinched up in such early hydroceles a long time before fluctuation can be obtained. Lastly, the sign when positive is characteristic of hydrocele alone, it can be produced by no other condition. In haematocele the sac becomes so thick, and the tension of the irritating fluid so high that the tunica cannot be pinched up.

Mention being made of haematoceles leads to the second point. Major Gabbett in his little book^{*} recently published states that "haematoceles occur far more frequently in India than in Europe are not by any means due to trauma, nor do they always appear suddenly." While

agreeing in the main with this statement, my experience has been that in most cases there has been a previous history of tapping, and of recent tapping. I used to think that tapping followed by haematocele indicated that the testis had been punctured. A moderate number of cases of haematocele which had followed tapping by people known to me, who would be unlikely to puncture the testicle, caused some reflection on the point, and I believe now that the haematocele is not due to injury of the testis when tapping, but that it is due to rupture of the vessels of the sac wall. It is in fact comparable with the haemorrhage which so often occurs when a thyroid cyst is tapped.

The tapping is usually done by a Sub-Assistant Surgeon in the mofussil. All Madras dispensaries are supplied with what are termed hydrocele trocals and the Sub-Assistant Surgeon uses this as he has no other. These trocals are suitable for tapping a bladder perhaps, but they are about eight times too big for hydrocele. If an hydrocele must be tapped, it should be done with as fine a trocal as possible, and it should be allowed a very long time to empty itself. It is, I believe, the sudden diminution of tension within the sac that causes the rupture of the small veins in the sac wall. These, suddenly losing their accustomed support, bleed into the sac until the pressure becomes sufficient to stop it.

Confirmatory evidence of this suggestion can be found when operating on hydrocele. Usually one slits the sac,—everts it and sews up the wound as rapidly as possible, but if, after slitting and evertting the sac, one waits a few minutes, in most cases it will be observed—and in all cases where great tension has existed—that the inner surface of the sac, especially the reflection from the epididymis, turns pink, then red, then violet and frequently oozes blood all over. In this case, of course, the lowering of the tension has been quite sudden. I am convinced that most cases of post-operative haemorrhage bleed in this way and not from the cut edge of the sac.

This fact may modify practice in operating. A very successful radical cure may be obtained by making as small a hole as possible in the tunica vaginalis and then squeezing the testis through this, trusting to tension to keep the sac everted. The result of this is that the edge of the opening into the sac in its new position forces the cord to a lower level than normal and the testis, when suspended by the cord, hangs horizontally, at any rate until some atrophy of the sac has occurred. This being so, it is clear that when the bandage has been applied with some pressure, the testis will be forced into a more vertical position again, and now the cord will be kinked where the opening of the sac surrounds it. This would be no great matter in the case of a small hydrocele from which no blood is oozing, but if there is

* Four common surgical operations in India, p. 24

any tendency to bleed, it is certain that this kinking of the veins in the cord will increase that tendency I therefore recommend that when the sac is large and the tension of the fluid has been high, the best practice is to make a fairly large opening in the sac and, after evertting it, to fasten the edges together behind the testis with one stitch, paying particular attention to the position of the cord so that the veins will not be pressed upon In such cases it is also wise to put in a gauze drain If this is left for twenty-four hours and then removed, it will be found soaked with blood, however tightly the scrotum may have been bandaged It is, I believe, this accumulation of blood within the scrotum that accounts for the fact that such a simple operation as a radical cure for hydrocele, so often gives trouble in the after-treatment

ON AN ANOPHELINE ALLIED TO MYZO MYIA LISTONI.

By U N. BRAHMACHARI, M A., M D., Ph D

Teacher of Medicine at the Campbell Medical School, Calcutta

This species is small and dark

Palpi—With two white bands, the one which includes the tip being much broader than the basal band The former includes the two terminal segments of the palpi

Proboscis—Slightly longer than the palpi, dark brown in its inner half, lighter in colour in its outer half, the tip being lightest in colour

Antennæ—With short whitish and blackish hairs

Head—Same as in *Myzomyia Listoni*

Thorax—Same as in *Myzomyia Listoni*

Wings—The costa has five dark-scaled areas separated by small white spots The first area at the base of the costa corresponds in length to half the corresponding dark area on the costa of the *Listoni* The first longitudinal vein has four dark areas, the first being almost equal in length to that of the corresponding area in the costa The trunk of the second longitudinal vein is white except for a tiny black area at its middle, and another larger dark area near to its bifurcation The anterior branch has three white spots and the posterior two white ones The third longitudinal vein is white-scaled except near to its termination The fourth longitudinal vein has two white-scaled areas on its trunk The posterior branch is white The fifth longitudinal vein has its stem white-scaled except for a tiny spot near to its origin The anterior branch has three white spots and the posterior is almost white-scaled throughout except for a tiny spot near to its base The sixth longitudinal vein is white-scaled except for three tiny black areas The wing fringe is white-scaled opposite all the longitudinal veins including the sixth

Legs—Brown, but have white scales at the junction of the femur with the tibia and at the tibio-tarsal and tarsal segments The white scales are most marked in the anterior leg and less marked in the middle and posterior legs

Abdomen—Same as *Listoni*

Locality—Found in a tank in the Campbell Hospital, Calcutta, among a large number of *fuliginosus* The tank has glassy sides

This anopheline differs from true *Listoni* in the following respects —

- (1) Different palpal markings
- (2) Different proboscis markings
- (3) Different wing markings
- (4) Different leg markings

EXAMINATIONS—HINDUSTANI—With reference to India Army Order No 22 of 1911, publishing revised rules for the conduct of examinations in Higher and Lower standards in Hindustani, it is notified that at the examinations to be held in the last quarter of the current year, candidates will have the option of being examined on the new or old text-books, as they prefer During this period candidates who have already passed in Part I or Part II of the tests under the existing regulations, will be exempt from passing in the corresponding part of the new examination For this purpose the equivalent of such parts will be taken to be—for Part I, sub-heads (d) and (e), for Part II, sub heads (a), (b) and (c) of the new tests

At all examinations subsequent to 1st January 1912, qualification in the whole examination in each standard, as laid down in the above-quoted order, will be required

With reference to paragraph 636, Army Regulations, India, Volume I, the classes therein named who have already drawn half the total reward for previous success in a part of the examination will, on qualifying in the new tests, only be entitled to the remaining half of the reward

The equivalent of Part II, Lower standard, sub-heads (a) and (c), for qualification for engineer pay, referred to in paragraph 680, Army Regulations, India, Volume I, will, under the revised rules, be sub-heads (a) and (b) of the test for the Lower standard examination

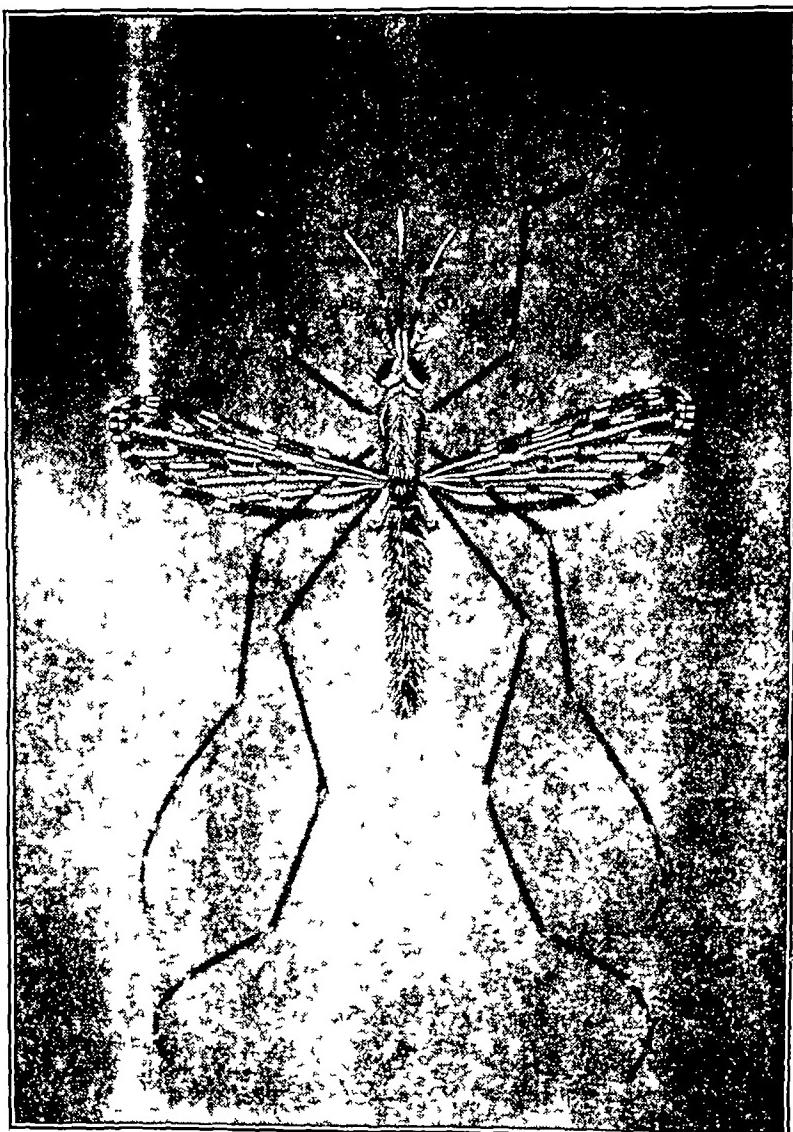
Dr BURTON NICOL's figures of Heights and Weights, p 266 above, strongly resemble the formula known as "Buchanan's formula" published in these columns many years ago It runs —

"Taking 5ft to correspond to a weight of 100lb, add 3lb for every inch up to 5ft 8in, for 5ft 8in and over add 4lb per inch, e.g., 5ft 3in = 109lb, and 5ft. 6in = 118lb, 5ft 10in = 132lb, &c., &c."

AN ANOPHELINE ALLIED TO MYZOMYIA LISTONI

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Indian Medical Gazette

JULY

"THE DAWN OF A HEALTH AGE"

THE legislation recently introduced into the House of Commons by Mr Lloyd George will, when passed into an Act of Parliament, necessarily cause far-reaching changes in the medical profession in Great Britain.

It is well known that all political parties are committed to a reform of the Poor Laws and that they are unsatisfactory, is admitted. Such changes, however, must necessarily seriously affect a large number of medical men and the new Bill for Insurance against sickness and unemployment must necessarily place in a more or less official position a large number of private practitioners.

This question has been very forcibly discussed by Dr Benjamin Moore in a book which we commend to the attention of our readers.* Dr Moore is most uncompromising in the methods of reform. The energies of some 32,000 medical men in Great Britain are wasted, he says, on tinkering at the diseased individual, while only a small minority of medical men are engaged in the more important duty of preventing disease, e.g., one Medical Officer of Health in a town of 300,000 inhabitants is utterly useless in making any serious attempt to grapple with disease and the distress caused by disease. He would reverse the system and put the majority of medical men on to search out and seek for disease and so prevent its spread. He has no good words to say for existing regulations for the Notification of infectious diseases, where the compulsory powers for segregation of the infected are seldom used.

His chapter on the doctor and his patient in private practice and in state practice is distinctly good reading, and full of facts and statements which cannot be gainsaid. The abuse of the club system, which sweats the doctor, while the overworked doctor scamps the patients come in for severe censure and the abuse of hospitals at the expense of the practitioner (which we are beginning to realise in India), is very forcibly commented upon, and even as it is, the voluntary hospital system of Great Britain

can only provide for 15 or 20 per cent of the cases which need hospital care and treatment. Dr Moore's remedy for all this is the establishment of a National Medical Service, on the lines of the Indian Medical Service, along with the nationalisation of all hospitals, voluntary and poor law. It is interesting to see the lines advanced opinion is taking in Great Britain at a time when what is supposed to be advanced opinion in India is striving to reduce or do away with a system which is held up as a sort of model of what should be in Great Britain.

When, however, we come to the details of Dr. Moore's proposals for a National Medical Service we see many difficulties, and the first is the smallness of the proposed pay. The details are given in Dr Moore's Chapters III and VI. He states, it is quite a liberal estimate to take the average income of the profession at £250, or with 32,000 medical men in practice in the United Kingdom, an aggregate income of 8 millions a year. He admits the profession is underpaid and would propose 10 millions as the total cost to the state of the services of 32,000 medical men or an average of just over £300 a year from £150 rising to £1,000. However, as at least one-third of these medical men do a higher class private practice only two-thirds would be employed in the case of the "working classes". He calculates that in any scheme of compulsory State Insurance 12 million workmen would participate (a fairly correct estimate as Mr Lloyd George's new bill calculates on 13 millions), and for this an army of medical men will be needed, if we are to distribute the work as Dr Moore suggests at the rate of, say, 500 families or houses per man.

That such an establishment would cost a vast sum, say 10 millions, Dr Moore admits, but as he points out, as a matter of fact, this money is found somehow and is paid in medical attendance and in the economic loss caused by illness.

Dr Moore's scheme involves a radical and complete revolution in the relations of the medical man to the individual and to the state, but when the new Bill comes into force something of the kind will be necessary, though it appears as if Government intended the work to be left to medical men working through the so-called Friendly Societies. The present system of rivalry between voluntary hospitals with paying

* The Dawn of a Health Age. By B. Moore D.Sc. M.R.C.S. London J. & A. Churchill, 1911. Price 3s. 6d. Pp 204

wards and the private practitioner is essentially bad, and no one can well defend the system of the Poor Law as at present administered, and nor can anyone say that enough has been done when we think of the enormous numbers who die of disease which could be largely prevented, e.g., infantile diarrhoea or tuberculosis.

Current Topics

THE 1911 CENSUS IN INDIA

The Government of India have published a preliminary Resolution in the Census held on the night of 10th March 1911, which contains much of interest.

The total population of India as so far ascertained amounted to 315,001,099 (*i.e.*, over 315 millions), *viz.* British Territory 241,172,371 and Native States 8,092,479. These figures are of course, liable to correction after the detailed tabulation is completed. They are, however, sufficiently accurate for practical purposes. The following table gives the variation per cent since 1881, but the greater accuracy of succeeding Censuses and this inclusion of new areas must be taken into account.

Variation per cent

	1881 to 1891	1891 to 1901	1901 to 1911
India	+ 13.2	+ 2.4	+ 7.0
Provinces	+ 11.2	+ 4.7	+ 5.4
States	+ 20.2	- 5.1	+ 12.0

It is calculated, however, that, after allowing for artificial changes the actual gain in 1881-91 was only 9.08 per cent and in the following decade 1.5 per cent, and that the net increase at the present Census comes to 6.4 per cent.

At present it is not possible to appraise at their full value the factors which have influenced the incidence of population as natural causes, emigration, etc. Early in the last decade widespread famine, followed chiefly in the Native States by a great mortality, occurred. We quote the following on the mortality from plague.—

"But a new and terrible disease had now to be reckoned with. Breaking out in Bombay City in 1890 the plague had already in March 1911 caused a recorded mortality of about half a million. Since then it has continued to ravage, especially in Bombay and Upper India. The mortality from this scourge rose from 284,000 in 1901 to 1,318,000 in 1907. It then fell to well under 20,000 in 1908 and 1909. In 1910 it was 400,000. The total number of deaths from plague during the decade was nearly six and a half millions, of which over one third occurred in the Punjab, and two fifths in the United Provinces and Bombay. In the Punjab and United Provinces, malaria was also very

prevalent. The reported mortality from fevers in the United Provinces in 1908 was nearly two millions, and greatly exceeded the total number of deaths from plague in the whole decade. Elsewhere, in spite of a certain amount of plague, the decade was on the whole a healthy one."

We next give the new Census figures for the Principal Provinces and States —

	Total	Males	Females	Variation 1901-11 per cent
India	315,001,099	161,219,376	153,781,723	+ 7.0
Bengal	52,058,161	26,261,748	26,391,713	+ 3.8
Bombay Presidency	19,664,546	10,239,722	9,424,824	+ 1.7
Burma	12,057,905	6,144,301	5,913,601	+ 14.0
C P & Berar	13,917,637	6,931,505	6,986,132	- 8.3
E. B. & Assam	33,978,307	17,392,218	16,586,099	+ 11.4
Madras	41,402,026	20,356,338	21,015,688	+ 8.3
N. W. Frontier Province	2,199,029	1,181,201	1,014,828	+ 7.5
Punjab	19,962,163	10,855,634	8,976,527	- 1.8
United Provinces	47,193,392	24,628,344	22,565,048	- 1.0
States and Agencies	70,828,724	36,427,495	34,401,233	+ 12.9

It is worth noticing in passing that there is an excess of females over males in Bengal, Central Provinces and in Madras.

THE TREATMENT OF LEPROSY WITH NASTIN B

This old world disease is very much to the fore in India just now, and the recent work done in India and elsewhere gives us hope that science has discovered a method of treating this essentially chronic and resistant disease in a way and to an extent not hitherto possible. The subject of treating this disease by *Nastin* introduced by Dr Deycke Pasha and Dr Reshad Bey, two physicians in the Imperial Ottoman Service, is fully discussed in certain papers read before the Bombay Medical Congress in February 1909 and in our special Supplement in November 1909. The value of *Nastin* in ameliorating the condition of lepers having been recognised widely, the Secretary of State for India called for a report on any experiments that might have been made in India on the subject, and the Inspector-General of Civil Hospitals in Bengal placed 500 rupees at the disposal of Major S. Anderson, I.M.S., at Purulia, and Major L. Rogers, I.M.S., for the purchase of *Nastin* for trial in the two large Leprosy Asylums at Purulia and in Calcutta.*

* Report on experiments with *Nastin B* on Leprosy by Major S. Anderson I.M.S., and Major L. Rogers, I.M.S., with notes by Colonel G. F. A. Harris, F.R.C.P. Calcutta, Bengal Secretariat Press, 1911.

The reports of these officers have now been published with an admirable introductory note by Colonel G F A Harris, I M S, F R C P, the Inspector-General of Hospitals, Bengal.

Nastin, Colonel Harris states, is a peculiar fatty substance extracted from 14 days old pure cultures of a species of *Streptothrix* (*S. Lepioides*) which is found in Leprosy. Recent research has shown that the *Lepia Bacillus* is a *Streptothrix*.

It will be remembered that Captain Beauchamp Williams, I M S (*Transactions*, Bombay Medical Congress and I M G Supplement, November 1909) considered that the results of his trials with Nastin were distinctly encouraging.

The present report deals with a small trial of the remedy in the Gobla Lepel Asylum by Major Leonard Rogers, but as this report deals only with four cases and is not fully reported on, we cannot attach much importance to it, beyond noting that Major Rogers considers the results to have been *nil*.

A much more full and complete report was made by Major S Anderson in the large Lepel Asylum or Colony near Puriulia in the Manbhum district. This report is illustrated by drawings showing the extent of the anaesthesia in the cases treated before and after the use of Nastin and temperature charts and clinical notes are given.

We may therefore, briefly summarise Major Anderson's conclusions —

(1) The cases treated all improved in general health and gained in weight.

(2) There was usually a marked local reaction in the nodules or leiomata, and the general reaction was marked in many cases. In the nodular and mixed variety the commencement of improvement in a particular area was signalled by tingling or creeping sensations in the part. Treatment with intervals of rest is necessary, each case must be treated on its merits, and those patients who were most tolerant of Nastin and in whom no reaction occurred undoubtedly showed the most improvement.

(3) The improvement in the anaesthesia patches was generally marked, "all the cases showed an improvement in this respect."

(4) Major Anderson's temperature charts are very interesting, they graphically show the action of the Nastin, and it is of special importance to note that the injection of Nastin was well borne as long as the air temperature did not exceed 100° F. He therefore recommends its use in the cold weather preferably.

Major Anderson concludes that "the Nastin B treatment constitutes a real advance, and whilst it undoubtedly aborts the leprous processes in the same way as mercury does in syphilis and just as in syphilis one cannot say the cure is permanent, so the same applies to Nastin in leprosy."

He also considers Nastin useful for prophylaxis that it can so "immunise the patient as to make him no longer a danger to the community." This in itself is an advance. We strongly

recommend a perusal of the report to our readers.

YELLOW SANTONIN IN SPRUE

THERE is a very interesting discussion reported in *Transactions of the Society of Tropical Medicine and Hygiene* (April 1911) on the value of santonin in the treatment of intestinal affections of the Tropics, a discussion all the more interesting because Dr Charles Begg, who introduced the treatment over 30 years ago, was present and took part in the discussion. A very considerable divergence of opinion was evident, but on one point there was no doubt whatever, and that is, that the ordinary white santonin is useless in such cases, whereas it is the yellow santonin *i.e.*, chromosantonin or photosantonin which is of value. This is prepared by exposing ordinary santonin to prolonged sunlight.

The question was introduced by Dr Preston-Maxwell of China who maintained that chromosantonin has a "specific influence in certain cases at present classified under the wide term Sprue, and in certain cases of chronic dysentery which are not due to the action of the amœba coli."

Dr Begg's remarks were of special interest, he commented on the various kinds of cases, often covered by the name of sprue as, "Sprue as seen in China," "Ceylon sore mouth," "Indian hill diarrhoea," "the Sprue of Burma," etc. He emphasised importance of early treatment, the drug cannot be expected to cure "great destruction of the mucous membrane" or "complicated cases," "chronic cases are hardly a fair test" Dr Begg worked it first with santonin "which had been exposed to the sunshine of China for 14 years"—"new supply of white santonin he found perfectly useless" "The formation of chromo-santonin must be slow, a mere light lemon colour is not enough" Two weeks' exposure in India (to sunlight), he found equal to that of as many months in England. Again the drug must be given in oil, olive, almond or even castor oil, "a test for the necessity to administer the drug is the loss of the normal alkalinity of the motions" and the importance of total abstinence from alcohol was emphasised Sir Havelock Cleves, K C V O, closed the discussion, remarking that the opinion of the meeting was not very favourable, but he said that all would be willing to give yellow santonin a trial with olive oil.

AN EARLY INSTANCE OF CHOLERA

AMONG the records preserved in the Record Department of the India Office is a paper dated 1st December 1709, with the following title* —

"The acc^t of the Honble Comp^{as} servants that Dyed on the "Island Bombay wth the Distempers commencing from y^e month March Anno 1709 to y^e instant December 1709"

* Bombay Muster Rolls, Vol I, 1709—1719 Catalogue of General Records, p 200

The deaths in this return were twenty-one in all, one of which is recorded as "Michael Feij, Corpth moedesheen or a violent vomiting wth a looseness." Another death from "moedesheen" is recorded lower down in the list. One officer is included in the return, the cause of death being consumption. Most of the other deaths are recorded as due to "flux," i.e., dysentery.

Mort-de-chien, or dog's death, is a common and well-known early term for what is now called cholera, the symptoms given above in this case are those of cholera. As only two deaths from this cause, at a considerable interval, are returned, we may conclude that the cases were sporadic, not part of an epidemic.

A good deal of rubbish has been written of late in the lay newspapers about a so-called Mosquito plant, and certain Indian newspapers have taken it is proved that the venerated *tulsi* plant has specific virtues. Colonel W G King, C.B., I.M.S. (ret'd), has disposed of this matter in a brief letter to the *Lancet* (April 29th, 1911) where he states that, long ago, he tested the value of this *tulsi* plant (*Ocimum Sanctum*) and so far from being a protection against mosquitoes he found that "they availed themselves of the plants as convenient resting-places—but otherwise ignored their presence."

We are glad to see that the *Lancet* (April 8, p 1911) supports the arguments we have used on the necessity of establishing in India a laboratory for the carrying out of the Biochemical tests for bloodstains.

MESSRS BAILLIERE, TINDALL AND CO announce a new edition of Green's Pathology, edited by Dr Bosquet, the price will be reduced from 18s to 15s. It is included in the well-known series with Rose and Carless' *Surgery*, Jellett's *Midwifery* and Castillium and Chalmers' *Tropical Medicine*.

We have received the Catalogue of Lewis' *Medical Circulating Library*, London, with classified Index. Lewis' Library is well known, and we can testify to its value to men on furlough. The terms of subscription are low and the supply of scientific and medical books is ample and always up to date.

Sub-Assistant Surgeon Dutt SHARMA from Rajput sends us a letter, pointing out the wonderful value of finely powdered burnt alum, in doses of 8 to 16 grains, mixed with sugar in the treatment of intermittent fever. We confess to not having the same profound faith in it as the Sub-Assistant Surgeon has.

COLONEL SIR DAVID BRUCE, F.R.S., has some very sensible remarks on the freedom of Ismailia from mosquitoes. He writes (*Journal R.A.*,

M.C. April 1911)—"The Suez Canal Company is all-powerful at Ismailia. The inhabitants are employees of the Company and are paid by it. The Company is a rich one, it has the necessary funds with these two factors almost any sanitary reform may be carried out. Nature has assisted by supplying a rainless climate."

This is true, "despotic hygiene" again, as at Panama and ample funds provided by a powerful Company, whom it pays to keep its employees healthy.

Reviews

A Pocket Book of Treatment—By R. W. LITCHFIELD, M.D. London Edward Arnold and Longmans, Green & Co., Bombay 1911 Price 6s net

This is a very useful little book, elegantly got up, in flexible binding and flap to cover which makes it suitable for the busy practitioner to carry about.

All subsidiary methods of treatment are placed at the beginning of the book—e.g., symptomatic treatment by nature, by dings (incompatibles, flavourings), by new remedies, synonyms of dings, treatment by bed, by diet, food values, classifications of diet, special diets in various diseases in detail, infant feeding, invalid drinks and dishes, alcohol, aerated waters, rectal feeding, baths, spas, spas in Great Britain and Europe, massage, clothing, exercises (Frenkel's, Oerstel's, Schott-Nauheim, Swedish), electricity, radium, X-rays, light, treatment by serums and vaccines, treatment by apparatus, hypnosis, by Bier's hyperæmia, by operation, poisons and antidotes, etc.

Then follows notes on treatment of each disease in alphabetical order, giving many prescriptions in full. A table of doses is appended and a lot of blank pages for writing in additional formulae.

The whole book is useful and can be recommended to practitioners.

Vaginal Cæliotomy—By S. WILLIS BANDLER, M.D. Published by W B Saunders Company

It is self-evident that vaginal cæliotomy demands greater skill and experience than the abdominal operation, but this alone will not account for the almost complete neglect by a very large portion of the surgical and gynaecological world of a procedure which minimises shock, makes convalescence less irksome, and avoids the risks incident to an abdominal incision. Enthusiastic admirers, chiefly German, claimed too much for the vaginal operation. Duhessem, for example, to whom this volume is dedicated, claimed that 80 per cent of all cæliotomies for pelvic gynaecological diseases should be performed by the vaginal route and estimated his mortality in 1,600 cases at 2 per cent, but the figures do not bear examination,

for, as Dr Bandler points out, if cases of simple vaginal fixation of the uterus are excluded, Dubuisson's mortality rises to from 5 to 8 per cent which is probably no better than the results of Howard Kelly and others who have done so much to improve the technique and lessen the risks of the abdominal operation. Even so distinguished an admirer of vaginal caesiotomy as Schauta is constrained to affirm that, though the vaginal method should be adopted whenever possible, the surgeon "must always in all cases leave himself free to change the work and method of operation even during the operation."

It is fortunate, therefore, that this volume, probably the first complete monograph on the subject in the English language, comes from a critical advocate who claims no more than that in the thorough collection of cystocele, descensus uteri, prolapse of the uterus, and for simple hysterectomy, vaginal caesiotomy has a value so great that the abdominal route should scarcely come into consideration. This is a contention with which we are in hearty agreement. We commend the book to our readers for its critical judgment, terseness of language, fulness of detail. Its value is immensely enhanced by the numerous and excellent illustrations that enable one to follow the technique of each procedure. The publishers have done all in their power to make the monograph perfect, and we wish fulfilment to the author's hope that it may suggest the value of the vaginal path in the collection of many pelvic gynaecological diseases.

A Treatise on Diagnostic Methods.—By Professor SAHLI. Second English Edition, translated from the Fifth German Edition. Pp 1,229. W B Saunders & Co.

The previous English edition of this book is very widely known and is deservedly popular. It constitutes an almost encyclopaedic account of the subject dealt with, and when it is stated that the new edition contains about three hundred pages of fresh matter, it will be seen that the author has made an effort to incorporate all that is valuable in the new work done in the six years that have elapsed since the appearance of the previous edition.

Probably in a few years a book of this kind will be written by 'many authors,' for it is nothing short of astonishing that one man should speak with authority on such a variety of subjects as are dealt with in this volume. It is almost a relief to find that Professor Sahlı admits that he cannot adequately deal with the subject of X-rays in diagnosis. With this one exception the entire range of clinical diagnostic methods is fully and thoroughly discussed, the various modifications of the Wissnerman test being described with a completeness which shows that the author has kept abreast of the times. Tropical diseases receive somewhat uneven treatment. Malaria is fully dealt with, but the parasite of Kala-Azar is not

even mentioned and the amoeba of dysentery is very inadequately noticed.

Mackenzie's work on the heart receives its due share of attention, modern methods of examination of the stomach, larynx, bladder and lower bowel are fully described, though one is surprised that the cystoscope does not find a place among the instruments of diagnosis, seeing that the oesophagoscope and practically all the other mechanical aids to visual diagnosis are fully described. Perhaps it is the chemical section of the book that is the strongest, there are certainly well-known methods of chemical analysis of the fluids of the body that have not been fully discussed. As a book of reference on diagnostic methods, the work has no rival in English and there are few medical men who will not find the range of their diagnostic batteries greatly increased in many directions by the use of this book.

Induced Cell Reproduction and Cancer—By

H C Ross. Published by John Murray, London. Price 12s net.

A WORK that has received the hallmark of approval from Major Ronald Ross is entitled to serious consideration even though it be written by the distinguished scientist's own brother. The author found that by observing leucocytes in a special way and by adding various substances to the fluid in which they were immersed, cell division could be detected. The technique is complicated, but it is carefully described, and it should be quite possible for anyone to repeat the experiments. A special preparation of nuclein stimulates the leucocytes to cell division and the addition of atropin and polychrome methylene blue hastens the process considerably.

An observation which the author considers to be of great importance is that the eosinophilous leucocytes of cancer patients contain a slightly smaller number of granules than those of healthy persons. The process of counting is rather difficult and the average reduction is only 4 per cent, so that it may fairly be doubted whether the author is justified in making a generalization from the figures, and in saying that the reduction indicates the presence of some substance which causes the extinction of the eosinophile granules. Further experiments have convinced Dr Ross that the cause of cancer is the presence in the body of certain substances resulting from the breaking up of animal tissues. The line of study suggested by the book is well worth following up, for it is obviously a matter of great importance to obtain as much evidence as possible on the effect of various substances in promoting cell multiplication, as in this way a clue to the nature of cancer may be obtained.

It may be considered that the importance of the actual results obtained does not justify the publication of such an imposing volume, but, on the other hand, it is certainly useful to attract as much attention as possible to a line of research which may have far-reaching effects in the future.

The Anatomic Histological Processes of Bright's Disease—By HORS OERTEL, Director of the Russell Sage Institute of Pathology, New York. Published by W B Saunders & Co Pp 227

THOUGH this book consists essentially of a shorthand report of a series of lectures on the Pathology of Bright's Disease, it is produced in such a way as to be certain of a place as a standard authority on the subject. The illustrations are exceedingly good, especially the reproductions of coloured drawings of the naked eye appearance of the kidney in the more important diseased conditions.

The treatment of the subject is on the lines of a critical survey of the work that has been done, and though the nomenclature is not quite what English readers have been accustomed to, there is nothing revolutionary in the book.

It is essentially a valuable monograph which deserves a place in every complete medical library, but it is not likely to find a large sale among the ordinary members of the medical profession.

Principles of Pharmacy—By HENRY V. ARNOLD, Ph. G., Ph. D., Dean of Pharmacy in the Cleveland School of Pharmacy, Department of Pharmacy, Western Reserve University, Cleveland, Ohio. Pp 1,175, with 216 Original Illustrations. Published by W B Saunders & Co, 1909.

THIS monumental work, as the author states in his preface, is divided into seven parts.

Part I—Deals with pharmaceutical processes and a striking feature is the discussion of the arithmetic of pharmacy.

Part II—Deals with the galenical preparations of the pharmacopœia and those unofficials worthy of notice.

Part III—Deals with the inorganic chemicals used in pharmacy.

Part IV—Discusses the organic chemicals used in pharmacy and that according to the most modern classification.

Part V—Is devoted to chemical testing and presents a systematic grouping of all the tests of the pharmacopœia, a feature not found elsewhere.

Part VI—Deals with the prescription from the time it is written to the time it is dispensed.

Part VII—Gives the laboratory work which has been followed with much success by the students of the Cleveland School of Pharmacy.

This book is intended for the use of students of pharmacy. Using the pharmacopœia of the United States as a basis, the author has produced a most exhaustive work replete with up-to-date information. The teaching is eminently sound, practical and reliable. We have tested the treatise in many ways and have been more than satisfied. The author has fulfilled the task he set himself to perform, and we can thoroughly recommend the work to all students desirous of acquiring a thorough practical knowledge of the art. Whilst the book contains a mass of information more than is usually required by the student of medicine, we would strongly recom-

mend the chapter on prescribing to senior students and young practitioners. We thoroughly agree with the author in his statement that "the modern physician, alas! pays but little attention to his prescription, and there is no part of the curriculum of medical colleges more neglected than the very important branch of prescription writing. It is sadly true, that one reason why so many young physicians have gotten into the pernicious practice of prescribing ready-made nostrums, is because of their lack of knowledge of prescription writing." Should commonsense ever in the distant future have any say in the medical students' studies, the time now wasted in the study of minute anatomy will be more profitably spent in studying a subject of vastly more importance to his future success and to his patient's welfare.

Physiological Principles in Treatment—By W LANGDON BROWN, M.A., M.D. (Cantab.), F.R.C.P., Physician to the Metropolitan Hospital, Medical Registrar and Demonstrator of Physiology, St Bartholomew's Hospital. Second Edition. London: Baillière, Tindall and Cox, 1910. Crown 8vo, pp 392. Price 5s net.

The first edition of this book appeared in 1898. In the present edition, the sections on movements of the endogenous poisons, intestinal intoxications, and irregular action of the heart have been in part re-written. This book is not a treatise on applied physiology, but deals with the application of modern physiological teaching in every-day practice. It is in fact "medical physiology," the sort of medical physiology which the practitioner will find of every-day use to him. It is well written and interestingly written, and makes the reader think. It is a refreshing antidote to the never-ending stream of literature provided for us by the manufacturing chemist. There are twelve chapters, the most interesting of which deal with the principles of Organotherapy, the Rational Treatment of Gastric Disorders, Uric Acid and the Purin Bodies, Glycosuria and Diabetes, Acetonuria and Acid Intoxications and the Vaso-motor System in Disease. In his article on Adrenalin Solution the author does not state the strength he recommends for intravenous injection. This omission prevents us from judging how much benefit is to be ascribed to the adrenalin solution, and how much to the saline solution used to dilute it. His remarks on the value of estimations of urea output are very much to the point. The views on the value of rectal feeding—immediate feeding in gastric ulcer and treatment by lactic acid ferment are eminently reasonable. He states that the results of the injection of magnesium sulphate in cases of tetanus have been encouraging. Personally we have not tried it, but have heard no encouraging report from those who have. We confidently advise medical men in India to read this work, especially those who are not in touch with the newer physiology. Its moderate price brings it within the reach of all.

The Feeble Minded — By E. B. SHERLOCK, M.D.
Macmillan & Co., Ltd., 1911 8s. 6d net

THIS valuable volume is a guide to study and practice, written by a former Superintendent of the Belmont Idiot Asylum. It is introduced by a note from the pen of Sir H. A. Donkin, for many years a member of the Prisons Board, who also served on the recent Royal Commission on the care and control of the feeble-minded. The term "feeble-minded" is, perhaps, the best we can get to express this unfortunate class which includes all grades of so-called "congenital" mental defect. It includes many to whom we cannot accurately apply the term idiot or imbecile. Dr. Sherlock's book is practical and sane. It is not the book of a faddist, but of a practical man who has a very complete knowledge of a subject which is daily attracting more attention.

The chapter on the varieties of feeble-minded persons is particularly good, and Dr. Sherlock's remarks on classification are sound and practical, though he cannot naturally resist making his own classification, which is as follows —

1. The feeble-minded — (a) the morally feeble-minded, those who display incorrigible criminal propensities, (b) the intellectually feeble-minded, those in whom the defect is primarily one of intelligence, and the latter class can be divided into nine families clinically.

The chapter on the handling of the feeble-minded is excellent.

In India unfortunately we are still miles away from such problems. Not that feeble-minded persons do not exist, they may be found in nearly every village, but we have not yet got enough accommodation in our asylums even for the loving lunatic and with difficulty even the criminal lunatic can be accommodated. It is, therefore, useless speculating on the care or control of the much larger class of feeble-minded persons.

When we realise that in the province of Bengal with over 52 million people, there is only asylum accommodation for about 1,000 persons, and when it is understood that non-criminal as well as criminal lunatics have still—even in the Presidency town of Calcutta—to be kept "under observation" in an ordinary prison cell, for want of a proper mental ward in the hospitals, there is no use in talking about the care of the feeble-minded. We would like the powers that be to read this book, it would at least show them that the Government of India gets off remarkably cheaply as regards the care and control of the insane and feeble-minded.

SPECIAL ARTICLES

I

THE LUCKNOW MEDICAL COLLEGE *

THE Lucknow Medical College the foundation-stone of which was laid on the 26th December

1905 by the Prince of Wales, will be opened on the 15th October next, the General Hospital which is a part of the scheme will, it is anticipated, be ready to receive patients by September 1913.

Both College and Hospital are being built at Shahminar, a most commanding site overlooking the Gumti river, close to Lucknow City. The College proper consists of the following separate buildings —

(1) THE MAIN ADMINISTRATIVE BLOCK

This is a two-storeyed building, the ground-floor is chiefly taken up by spacious examination and central halls, the floors of which are laid with alternate squares of black and white Italian marble. In the central hall massive stone tiers rise to the level of the upper floor which extends in open galleries surrounding three sides of the hall. In addition to the above, this block contains on the groundfloor a large entrance domed vestibule from which a wide marble staircase leads to the upper storey, the office of the Principal, general waiting rooms, Professors' sitting room, college office, students' common room and necessary lavatories. The upper floor contains a library which surrounds the examination hall on three sides, the Librarian's Office, and board room.

(2) THE ANATOMICAL BLOCK

This is a two-storeyed building, the groundfloor of which is made up of a large lecture theatre, private rooms for the Professor and Demonstrators of Anatomy, with lavatories opening off them, the dissecting room (to accommodate 100 students), the floors and walls of which are to a height of 5 ft, laid with white Italian marble, open gutter drains carved out of marble allow of the rapid cleaning and draining of this room. From one end of the dissecting room opens the students' lavatory containing a range of lavatory basins and students' lockers. The Anatomical Museum is placed on a gallery on the upper floor surrounding the dissecting room. In addition to the above a wing leads off containing prosector's and macerating rooms. At the back of the building are situated quarters for the domes and menial servants.

(3) PATHOLOGICAL AND PHYSIOLOGICAL BLOCK.

A large two-storeyed building the lower floor of which is taken up by Physiology, the upper by Pathology. The Physiology section comprises three separate laboratories for Histology, Chemical, Physiology and Experimental Physiology. The benching is fitted with necessary gas water and electric supply, the internal fittings including benches are being manufactured locally; all apparatus, instruments etc., which are of the most up-to-date and comprehensive description,

* [We are indebted for this article to the Hon'ble Colonel C. Manifold, I.M.S., and Capt H. Ross, I.M.S.—ED., I.V.G.]

are being obtained from Home. In addition to the above this floor also contains a separate balance room, rooms for electric galvanometer, photography, special research room, diagram and preparation rooms, Demonstrators and Assistants' rooms, store-rooms, and at one end a large lecture theatre for the use of both the Professor of Physiology and of Pathology. The upper floor is entirely devoted to Pathology and Bacteriology, and, in addition to separate Bacteriology and Pathology laboratories, contains a large Pathological Museum with necessary preparation rooms, special research rooms, Demonstrators and Assistants' rooms, culture sterilizing, and media rooms, private Professors' laboratory and a large animal hospital. Close behind the Anatomical block is situated the Medico-Legal Mortuary consisting of *post-mortem* room with students' gallery, and a separate Mortuary in which bodies awaiting inspection can be placed in separate inspection lockers to enable them to be viewed from a closed court-yard, the floors of this building throughout are paved with Italian marble.

The above four buildings comprise the College buildings proper. Close by is a large double-storeyed students' hostel which will accommodate 100 students, this contains an excellent swimming bath, necessary cook-houses and servants' quarters, a second hostel to accommodate an equal number of students is being erected on the other side of the Gumti at a distance of about a quarter of a mile from the College. Ample space is available for the laying out of grass lawns and terraces. Within the College grounds five Professors' bungalows have been erected, each surrounded by a good large garden. In another portion of the College grounds a large students' playing-ground is available, an extra playing-ground is also being laid out close to the trans-Gumti hostel.

The College buildings have all been built in the Indo-Saracenic style so as to be more or less in harmony with the old historical mosques and native buildings in the vicinity. The buildings are all in brick, lime-plastered and with necessary ornamentation of windows, verandah-pillars, etc., carried out in carved Minzapuri and Gwalior stone.

THE HOSPITAL

The Medical College Hospital, also built in the Indo-Saracenic style, will comprise the hospital main building, consisting of a large central block with two wings extending from the north-east and the north-west corners. This will accommodate 232 patients, within 100 yards of the hospital will stand the out-patient dispensary. The other buildings included in the hospital grounds are two self-contained cottage wards, each providing for six patients' quarters for two European and six Indian Assistant Surgeons,

members of the hospital staff, the nurses' quarters situated in a long single-storeyed building about 200 yards from the main hospital, accommodation being provided for 30 nurses. Close by the nurses' quarters a hostel to accommodate up to 30 female students is being erected.

The groundfloor of the central block of the hospital building contains the following —

An operating theatre for eyes, eye examination rooms, eye ward for females, special eye wards, infraction room, general and private waiting rooms, general operating theatre with necessary anaesthetic, sterilizing and recovery rooms, rooms for X-ray work, College Offices, Hospital Dispensary, Special wards, Research rooms, Clinical lecture room, Obstetric Surgeon's room, rooms for students on duty.

The upper floor contains the Gynaecological operating theatre, Gynaecological wards, special wards for women and children, store-rooms, linen rooms, hospital steward's office, sisters' returning rooms, record rooms, library, reading room, Materia Medica Museum, clinical lecture room and operating theatre, etc.

The two double-storeyed wings extending from the ends of the main hospital block contain 4 large wards each containing 28 beds for male and female, medical and surgical cases. These wards are connected with the main block by covered-in passages and are all surrounded with deep verandas.

The hospital building throughout will be fitted with electric light and gas, hot and cold water-supply. Shanks lavatory fittings are being erected throughout.

OUT-DOOR DISPENSARY

The out-door dispensary which lies within 100 yards of the west wing of the main hospital is a double-storeyed building half the groundfloor of which will be used for male patients, the other half being reserved for female patients, it is built round two open court-yards which are separated from one another by the dispensing department, it contains two operating rooms, one for male cases and one for females, anaesthetic rooms, Surgeons' consulting rooms, Medical consulting rooms, store-rooms, rooms for dressings, waiting rooms, etc. On the upper floor is situated the dental department.

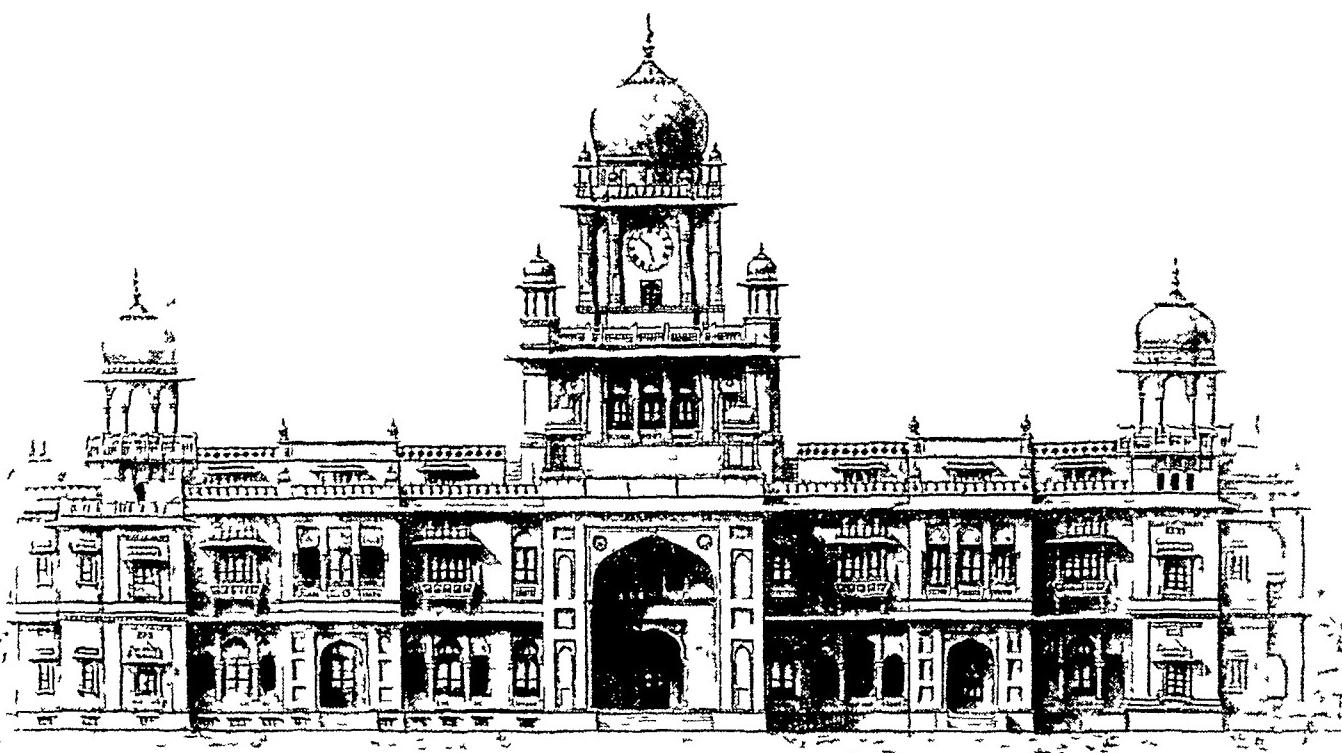
THE STAFF

The staff will be as follows :—

The Principal of the College, who will be Professor of Surgery and First Surgeon to the Hospital (holding charge of the majority of the surgical beds), will be an officer of the Indian Medical Service, his duties will include the administrative charge of the College and Hospital.

The Professor of Medicine who will be First Physician to the Hospital, will also be an

THE LUCKNOW MEDICAL COLLEGE



Indian Medical Service Officer, and will be in charge of the majority of the medical beds

The Professor of Physiology, an I M S Officer, will in addition to his professional duties be in *put charge of the medical wards*

The Professor of Pathology and Bacteriology, an I M S Officer will in addition to his professional duties, be in part charge of the Surgical Wards of the Hospital, he will in addition carry out all *post-mortem* examinations performed on patients dying in the hospital

The fifth Professorship will be that of Anatomy This post will be filled by a native of India who will be a Civil Assistant Surgeon holding special qualifications necessary for him to fill this post In addition he will act as Warden of the students' hostels, and will exercise general supervision over the students, seeing that discipline is observed In addition to the above five whole-time Professors there will be a Professorship in Midwifery and Gynaecology, this Professor being in charge of the Gynaecological wards in the hospital, this post will be filled by the Civil Surgeon of Lucknow

The duties of the Professor of Hygiene will be carried out by the Deputy Sanitary Commissioner of Lucknow Circle

There will be two lectureships, (a) Forensic Medicine, (b) Materia Medica and Pharmaceutics

(a) The lectureship in Forensic Medicine will be held by the Military Assistant Surgeon who holds the appointment of Assistant to the Civil Surgeon at Lucknow, this latter post is always held by a senior man specially chosen for his qualifications in Medico-Legal work

(b) The lectureship in Materia Medica and Pharmaceutics will be held by a Military Assistant Surgeon who will also hold charge of the hospital dispensary

A demonstratorship of Ophthalmology will be held by a Civil Assistant Surgeon, who will also be in charge of the out-patients' eye ward In addition to the above staff there will be two demonstrators for each of the subjects of Anatomy, Physiology and Pathology, these Demonstrators will be Civil Assistant Surgeons

The Hospital Staff will be as follows —

(1) Hospital Steward, a Military Assistant Surgeon, whose duties will include superintendence of diet, hospital grounds and servants, and general supervision over the menial and subordinate hospital staff

(2) A Civil Assistant Surgeon in charge of out-door dispensary

(3) House Physician

(4) House Surgeon

(5) Obstetric House Surgeon

(6) Ophthalmic House Surgeon

(7) Assistant House Physician

(8) Assistant House Surgeon

(9) Matron, whose duties will include charge of the hospital linen, clothing, etc., and the work of house-keepers for the nurses

The nursing staff will include a Lady Superintendent, Assistant Lady Superintendent and 22 nurses, of the former two will be London trained Nursing Sisters

REGULATIONS FOR STUDENTS

Students before admission to the College will be required to study science in a college affiliated to the Allahabad University for at least two years, and very special care has been taken to ensure that this preliminary science training will be in every way adequate Applicants for admission will be required to produce either a certificate of having passed the Intermediate Examination in Science of the Allahabad University taking Biology as elective subject, in addition they will be required to produce a certificate of having passed an additional specially prescribed test in Chemistry Or, a certificate of having passed the Bachelor of Science Examination of the Allahabad University with Biology as the elective subject Preference will in all cases be given to students who are natives of the United Provinces

The college year will consist of one long session commencing on 1st October and ending on 1st July The course of studies at present laid down consists of a four years' college curriculum As however, it is doubtful whether a four years' college course of studies will be recognised by the General Medical Council in England, a proposal to introduce a five years instead of the proposed four years' college course of studies is now under consideration On this subject the Faculty of Medicine of the Allahabad University are at present in correspondence with the General Medical Council and will shortly be in a position to make a final pronouncement on this point

The degrees which will be given are Bachelor of Medicine and Bachelor of Surgery

The proposed four years' college curriculum as at present laid down consists of —

COURSE OF STUDIES

1st Year

Osteology

Lectures on Anatomy

Dissections

Lectures on Physiology

Practical Physiology

2nd Year

Dissections

Surgical Applied Anatomy Chemical and Experimental Physiology

Materia Medica

Practical Pharmacy

Lectures on advanced Anatomy

1st M.B. University Examination at the end of the 2nd year in Anatomy, Physiology and Pharmacology

3rd Year

- Lectures on Medicine
- Lectures on Surgery
- Lectures on Pathology
- Lectures on Midwifery
- General and special out-patient practice
- Demonstrations in use of Ophthalmoscope, Laryngoscope, etc
- Three months, medical wards
- Three months, surgical wards
- Post-mortems under Professor of Pathology
- Practical Pathology and Bacteriology

4th Year

- Clinical Medicine
- Clinical Surgery
- Midwifery and Diseases of Women
- Operative Surgery
- Forensic Medicine and Hygiene
- Ophthalmology—Theoretical and Clinical
- Final M.B. Examination takes place at the end of the 4th year

The University Examinations will be 1st M.B. University Examination held at the end of the 2nd year in Anatomy, Physiology and Pharmacology

Final M.B. University Examination in Medicine, Surgery including Ophthalmology, Midwifery, Pathology, Medical Jurisprudence, Hygiene

The Final M.B. Examination shall be divided into Part I and Part II embracing the major and minor subjects

Part I—Major subjects	Medicine
	Surgery, including
	Ophthalmology
	Midwifery
Part II—Minor subjects	Pathology
	Medical Jurisprudence
	Hygiene

A candidate may either take up both parts together, or one part only, either Part I or Part II, at one time, leaving the other for a subsequent examination

II

POSTGRADUATE STUDY IN EUROPE

As the subject of postgraduate study is of the greatest importance to service men some of whom go every year home on "study leave," the following valuable and complete note on the subject is printed in full. It is taken from the *Journal of the American Medical Association* of April 8th, 1911 —

As this inquiry is representative of many which are received in this office at this time of the year, we answer it in some detail. The space which we give to the subject does not mean that we consider foreign opportunities for postgraduate study to be preferred in every

case, or even usually, to those in this country. In many subjects the advantages afforded by American clinics are more valuable and far less expensive. In gynaecology and general surgery, for instance, the opportunities for postgraduate work in the United States are equal if not superior to those to be obtained abroad. If the physician goes abroad with only a hazy idea of what he wishes to obtain, and with only an imperfect knowledge of the language of the country, or none at all, he is likely to bring back little of practical value except the prestige of having studied abroad—which, indeed, may have been the chief object in many cases. The value of what a physician brings back from a foreign tour varies directly with what he takes abroad with him.

If the physician goes to the continent, it is most important that he have a knowledge of French or German, according as he intends to study in Paris or Berlin or Vienna. This knowledge should be acquired as far as possible beforehand. The acquisition of a medical vocabulary in any foreign language can be considerably facilitated by the use of one of the medical manuals in that language, but the vocabulary learned by the eye alone is not sufficient; it is essential that the ear should be familiar with the pronunciation since, while medical terms are often spelled the same way or similarly in several languages, the pronunciation differs in each from all the others, and hence is sure to be confusing to one who is accustomed to the language only on the printed page.

Some of the smaller university cities abroad offer excellent opportunities for laboratory work, but for clinical instruction, which is what the American physician going abroad for postgraduate work usually desires, the best opportunities are found in the larger medical centres, and Vienna, Munich, Berlin, Paris and London are the cities usually selected. Information in regard to postgraduate medical courses in all countries is, according to recent plans, to be accumulated by the Medical Information Bureau of the Kaiserin Friedrich Haus, Berlin, the headquarters of the system of post graduate instruction throughout the empire (mentioned below) for free distribution to medical men in all parts of the world. The foreign governments are anxious to facilitate postgraduate work by outsiders, and are doing everything in their power to make it easy for those from abroad to get all the necessary information in regard to courses, libraries, lodgings, expense, etc. For this purpose scientific information bureaus have been opened in Paris and Berlin, as mentioned below, where they have attendants speaking various languages. These bureaus are listed in the telephone directory and are proving of great assistance to the newcomers. Vienna in particular has long provided exceptionally well arranged facilities for brief post graduate courses, some in English, and many arranged with special reference to the needs of American visitors.

LONDON

The instruction abroad, best suited for the physician who does not understand French or German is to be found in the British Isles. In Great Britain and Ireland facilities for graduate study are to be found in London, Cambridge, Edinburgh, Glasgow and Dublin. The London Postgraduate Association, Hanover Square, London, W.C., is an organization which has entered into arrangements with the principal medical schools and hospitals in London so that it is able to issue a ticket which admits the holder to all the clinical instruction provided in these institutions. The fee for three months' instruction is 10 guineas (about £52 50). Full particulars regarding this Association can be obtained from the Secretary at Examination Hall, Victoria Embankment, London, W.C.

In addition, postgraduate work to which foreigners are admitted is given by the following schools. The Medical Graduate College and Polyclinic, 22, Chenes Street, London, W.C., offers lectures, with practical demonstrations on chemistry, medicine and surgery in

general, skin diseases, and diseases of the eyes, throat, nose and ears, to which the yearly subscription for admittance is 1 guinea (about \$52.2) and practical courses of instruction in a large number of special subjects, for which an additional fee is charged. Further particulars can be obtained from the secretary. The North East London Postgraduate College, the Prince of Wales' General Hospital, Tottenham, N., offers a hospital student's ticket which entitles the holder to attend courses on clinical medicine and surgery in general, costing 5 guineas (about \$26.25), while the fee for each of the special courses, such as diseases of the nose, throat and ear, skin diseases, roentgenology, medical electrology, is 1 guinea (about \$5.25). Further particulars may be obtained from the dean of the college. The West London Postgraduate College, West London Hospital, Hammersmith, W., gives courses of instruction in general clinical medicine and surgery and special subjects. The dean of the college will furnish particulars as to terms, etc. The fee for each course offered by the London School of Tropical Medicine, Connaught Road, Albert Docks, is 16 guineas (about \$84). Further particulars may be obtained from P. J. Michelli, Esq. C. M. G., Seamen's Hospital, Greenwich, S.E. In London School of Clinical Medicine, Seamen's Hospital, Greenwich, S.E., courses of instruction are given in clinical medicine, and surgery and special subjects. The dean will supply further particulars if desired.

Among the London hospitals where postgraduate instruction may be obtained are the following. For general medicine St. Bartholomew's Hospital, West Smithfield, E.C., St. Thomas' Hospital, Albert Embankment, Westminster Bridge, S.E., University College Hospital, University, and Gower Streets, W.C., and London Hospital, Mile End, E. For pediatrics the Hospital for Sick Children, Great Ormond Street, Bloomsbury, W.C. For ear, nose, and throat diseases the Hospital for Throat Diseases, Golden Square, W. For ophthalmic work the Royal London Ophthalmic Hospital (formerly Moorfield's Eye Hospital), City Road, E.C. For nervous diseases the National Hospital for the Paralized and Epileptic, Queen Square, Bloomsbury, W.C.

PARIS

According to E. St. Jaques (*Med. Rec.*, Aug. 14, 1909) clinical facilities are greater in France than in Germany, and Paris excels in dermatologic, neurologic and genito-urinary work.

In Paris there is no special official organization for medical postgraduate instruction, but any physician, foreign as well as French, may without the payment of any fee, follow any theoretical course given in the Faculté de médecine or any of the clinical courses held in the hospitals or clinics. The physician should first introduce himself at the offices of the Assistance Publique, 3 Avenue Victoria. He will receive gratuitously a *carte d'entrée des hôpitaux*, which carries a formal request to the various directors of hospitals, etc., to assist the visitor with information and facilities; it also contains a list of all the hospitals under the jurisdiction of the Assistance Publique. In order to be admitted to the clinical lectures, ward visits and examination of patients the physician has only to present his card to the concierge of the hospital and to ask by name for the physician or surgeon whom he wishes to see.

A physician who desires to take a practical course and to have the privilege of the library of the Faculté de médecine pays a matriculation fee of about \$6 (30 francs), and in addition a fee for each practical course taken up, which is on the average about \$10 (50 francs).

In various hospitals, clinics and laboratories there are *cours de perfectionnement* organized at various times of the year, especially during vacation. These are announced by placards posted in the buildings of the Faculté de médecine and the various hospitals and by notice in the medical journals. The newcomer is advised to consult the last few numbers of some such periodical

as the *Bulletin médical* or the *Presse médicale* for notices of non-official courses (that is, those not given under the auspices of the Faculté de médecine).

The fees are variable, but rarely exceed \$10 or \$20. Moreover, there are several associations for complementary medical instruction which organize similar courses. Such courses are organized twice a year at No. 18 rue du Luxembourg, the winter series in November and December, the summer series in May and June. Vacation courses comprising the principal specialties are also organized in September and October. The price is about \$1 (20 francs) a course.

The course in bacteriology at the Pasteur Institute is three or four months long, and therefore is not given more than twice a year. Names must be sent in to Dr. Roux or his assistants some time in advance.

A free information bureau for physicians and others officially known as the Bureau de Renseignements Scientifiques, is maintained at the Sorbonne. It is open all the year around from 10 to 12 and from 2 to 5, with attendants able to speak German, English, Russian and Spanish, and catalogued information of all subjects of interest to persons intending to pursue scientific study.

"An English Handbook to the Paris Medical School," by A. A. Warden, published by P. Blakiston's Sons & Co., 1012, Walnut Street, Philadelphia, price 50 cents contains a map of the Quartier Latin and much useful information in regard to the schools and courses.

The cost of living in Paris naturally varies according to the location and accommodation required. The physician who comes to Paris to study will find it to his advantage to live in the Latin Quartier, which is the seat of the Faculté de médecine and of the Collège de France and is in proximity to many important hospitals and clinics. Room and board in private families may be had for a price varying from \$30 to \$60 a month (150 to 250 francs). Room without board costs on the average from \$10 to \$12 a month.

BERLIN

Many American physicians go to Germany or Austria for postgraduate study. Special advantages are found there for laboratory work and research, and instruction is said to be better organized, especially in Vienna. The two most important centers of medical instruction in German speaking countries, of course, are Berlin and Vienna.

Medical courses at Berlin are divided into (1) the regular university courses which are intended for the undergraduate students, 2) vacation courses given by the university instructors during March and October, and (3) monthly courses by private instructors, which are given the year round. These are mostly polyclinic or dispensary courses and correspond closely to the instruction given in graduate schools in the United States.

Regular student courses at the University of Berlin are often designed more for undergraduate than for postgraduate work. An occasional visit to these courses is welcomed without formality. To attend regularly one must sometimes matriculate. The university work is divided into a winter and a summer semester, the winter semester lasting from October 15 to March 15 and the summer semester from April 15 to August 15. The time for matriculation is comprised in the two weeks preceding the opening of the semester and the first two weeks of the semester. The matriculation fee is 18 marks, diploma and passport must be shown. Vacation courses are given twice a year (March and October) during the university holidays. These courses are for graduates in medicine and can be very highly recommended. They are however, sometimes overcrowded. Most of these courses begin on the first day or during the first week of the month and last for four weeks. Assistantships or so called "voluntary" assistantships are often obtainable in out patient departments and inside the hospitals. The requirements of such positions may best be obtained from the older men in the Anglo-American Medical Association or members of its orientation committee.

As mentioned in the Berlin Letter (*The Journal*) March 4, 1911, p 682), a double fee for the summer semester of 1911 has been imposed on foreigners attending lectures or taking laboratory work. The increase amounts to 10 marks (\$'50) for students in medicine and the natural sciences.

The Anglo-American Medical Association of Berlin was formed to promote the interests of British and American physicians studying in that city. The headquarters of the association are at Friedrichstrasse 105b where an information clerk is in attendance from 9 to 10 A.M. The president is Dr Bruggemann, Berlin W., Barbarossa Str. 33. The membership fee is 10 marks (about \$2.50) a year. The year book of the association will be sent by the secretary, W. J. Griffin, on receipt of 5 cents in foreign exchange stamp coupons. It contains courses most frequently attended by Americans, but does not pretend to be a complete list of all courses given in Berlin.

For courses not announced therein the newcomer should not fail to consult the following publication (1) Verzeichnis der Vorlesungen (list of university courses), price 60 pfgs., (2) Feier Kurse für praktische Aerzte (vacation list), (3) Schacht, Ratgeber und Wegweiser für Teilnehmer an ärztlichen Fortbildungskursen, price 1 mark, (4) Verzeichnis der Monatskurse, gratis, (5) Kurse für praktische Aerzte, gratis, (6) Verein für Aerzte Kurse, gratis. Nos 1 and 2 are the most important and will be sent to the United States on receipt of 25 cents in foreign exchange stamp coupons. They would probably be supplied either by the Anglo-American Medical Association or by the information bureau, similar to that mentioned at the Sorbonne, which is maintained at the Kaiserin Friedrich Haus, Luisenplatz 24.

Postgraduate courses on a large variety of subjects are given under the auspices of the Bureau des Zentralkomitees für das ärztliche Fortbildungswesen in Preussen, Berlin N.W. 6, Luisenplatz 24, Kaiserin Friedrich Haus für das ärztliche Fortbildungswesen. The subjects offered include the following: pathologic anatomy, internal medicine, surgery, ophthalmology, the clinical and practical application of bacteriology, diseases of women, obstetrics, industrial hygiene, diseases of the nose and throat, urinary diseases and gonorrhœa, dermatology and syphilis, diseases of children, including the nutrition of normal and diseased infants, clinical chemistry, care of the sick, gastric and intestinal diseases, diseases of the eye, surgical and mechanical orthopedics, the latest applications of water, light heat and electricity to therapeutics, roentgenology, etc.

The recently opened Amerika Institut, under the directorship of Prof Hugo Munsterberg, in the Royal Library Building, Universitätsstrasse 6, Berlin VII, seeks to assist Americans who wish to come into contact with German institutions, scholars, libraries, archives, laboratories, museums, hospitals, academies, etc.

It is imperative that American citizens bring with them passports. They must register in the consulate when arriving in Berlin. If possible it is best to reach Berlin about the twentieth of the month. According to information furnished by the Anglo-American Medical Association, at least one week should be spent in personal examination of the opportunities for study and in getting settled before beginning work.

DUSSELDORF

The Academy for Practical Medicine, Dusseldorf, offers courses, open to foreign physicians, in pathologic anatomy and experimental therapy, and clinical courses in surgery, gynaecology, obstetrics and pediatrics. The only expense is a registration fee of about \$1.25.

VIENNA

Vienna presents many advantages from the Medical student's point of view, one of which is the great amount and variety of the clinical material, since patients come to Vienna from territory within a very large radius.

Another advantage is the centralization of facilities for instruction, which makes it possible for the student to economize his time.

There are ten large public hospitals, the chief of which, the Allgemeines Krankenhaus, comprises three clinics each of surgery and medicine, two clinics each for gynaecology, dermatology and syphilis, ophthalmology, mental and nervous disease, and one each for otology, rhino laryngology and pediatrics. Some clinical teachers not only speak English fluently but give lectures in English in special classes. Within the last few years a magnificent new hospital has been erected a few hundred feet away from the old Allgemeines Krankenhaus, which is to be pulled down. It will contain only clinical wards for clinical teaching by ordinary professors. It is lavishly equipped in the most modern and scientific manner and will, when finished, contain 2,600 beds.

Besides this general hospital there are the Wiedner Hospital, the Rudolph Hospital and the Poliklinik, connected with the medical department of the university, in which clinical lectures are given also by professors during the semesters. The winter semester lasts from October till March 31, the summer semester from May 15 to July 15. The fees for clinical semesters lectures are low, about \$6 being the maximum, while special lectures are more expensive. A very good opportunity for anatomic and dissecting work is offered in the Anatomisches Institut, for pathologic anatomy and bacteriology in the Pathologisch-Anatomisches Institut. In these official institutes the fees for working and material come to something like \$10 to \$15 per term of eight weeks. There is also a well equipped institute for the study of physiology, and one for histology of the nerves. A modern institute for experimental pathology and therapeutic research was opened two years ago. All the institutions mentioned above are in the same quarter or district of Vienna, called Alsergrund, and are conveniently near each other.

Those who wish to spend considerable time in the wards do not find it difficult to obtain the position of *Hospitalarzt* in the wards, where they have the same rights as ordinary hospital officers, but not their duties, they, of course, receive no pay. The clinics for dermatology, practical medicine, syphilis, ophthalmology and otology especially are much frequented by American Hospitalants.

The following are specimen charges in classes arranged by private doctors and professors. Diagnostic classes for internal diseases, \$10 for six weeks, hematology, \$25, four to six weeks; surgery of the genito-urinary system, \$20, four weeks; surgery of the eye, \$5 to \$20, six to eight weeks. In classes on rhinology the fees are between \$20 and \$10, including operations on patients. Surgical practice on the cadaver is obtainable as a special course. Urbantschitsch's classes on otology are much frequented by English speaking physicians, and Finger's English classes on dermatology are an old established institution. Furthermore, it is possible to get up a special class for nearly any branch of medicine if the lecturer is guaranteed a minimum fee varying between \$100 and \$150 for the whole class, so that there is a vast opportunity for both practical and theoretical teaching at a low cost to the individual members of the class.

The following is reported by an observer as a specimen day. From 8 to 10 A.M. class at von Noorden's clinic, case of syringomyelia, two cases of multiple sclerosis, 10 A.M. to 12 M., Hochegger's clinic, removal of a cancer of the breast, operation on a pancreatic cyst, 12 M. to 1 P.M., at Weichselbaum's pathologic theatre, twenty five fresh specimens, obtained during the morning at the necropsies, cancer of the penis, diphtheritic inflammation of the larynx, a volvulus, an anencephalus, a liver with fatty degeneration from phosphorus poisoning, typhoid intestines, leukemic bone marrow, and several other interesting specimens, 1 to 2 P.M., a Cesarean section in Schauta's clinic, 4 to 5 P.M., a retinoscopy class in the second ophthalmic clinic, where

cases of optic neuritis, iritis and keratitis specifica, glaucoma and a case of papilledema were shown, 5 to 6 P.M., work at a chemical laboratory, 6 to 7 P.M., in operative class on the ear of the cadaver.

There are two well equipped public libraries. One is the large reading room (*Lesezimmer*) of the Universitätsbibliothek, comprising about 400,000 books, and the other is the Aerztliches Lesezimmer in the hospital, with about 22,000 books and periodicals. English medical works are provided in abundance and access to these libraries is easily obtained.

The American Medical Association of Vienna Schlossgasse 28, Vienna VIII, secretary, Dr M. W. Jacobs, also will be glad to assist any newcomer and to give information on study or other subjects.

A handbook in German, English and French of the postgraduate medical work under the patronage of the free organization for medical courses at the University of Vienna (Aerztliche Fortbildungskurse der freien Organisation für die medizinischen Kurse an der k. k. Universität Wien) is published by Urban & Schwarzenberg 1, Maximilianstrasse 4, Vienna, and supplied gratis on application.

A bureau of information for medical courses is maintained in the Allgemeines Krankenhaus, First Court, head offices (Direktion), first floor room 14, where information can be obtained on personal or written application.

In the Alsergrund, the district which corresponds to the Latin Quartier in Paris a conveniently situated room may be had for \$8 or \$12 a month. Board may be obtained for about \$30 or \$40 a month, or even less, \$10 or \$12 a week may be made to cover the expenses of decent living. There are low priced private dining halls for medical students and more expensive boarding houses on the English plan. The following streets are suitable and convenient: Spitalgasse, Alserstrasse, Lazarettgasse, Pettingergasse, Kochgasse, Skoda-gasse, Schlosselgasse, Währingerstrasse and Garnisonsgasse.

Correspondence

OWNERSHIP OF PRESCRIPTIONS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your April number a junior officer I. M. S., had a query about prescriptions. Perhaps the following extract from *The Prescriber* (Vol V No 5) Edinburgh, April 1911) will partly answer that question.

"The question as to who is the owner of a written prescription is one which appears for discussion periodically in the medical press. Whether discussed in its legal or in its ethical aspect, the question seems never to be satisfactorily settled, for the simple reason that it is never possible accurately to define what a prescription is. The patient looks upon it as his own by right of purchase and values it accordingly, the pharmacist regards it as his warrant for the preparation and supply of a certain remedial medicament, while the prescription is regarded by the physician who wrote it as a concrete expression of his treatment of a case after diagnosis. According to one or other of these views is held, the prescription is regarded as the property of the patient, of the pharmacist, or of the physician. As there are no more patients than pharmacists or physicians the patient's view is naturally the most widely spread, and the popular idea is that the physician who does not give a prescription does not give value for his fee. This view, however, though very prevalent among the laity, is by no means universal. If it were, there would already be a regular trade in second hand prescriptions, and although people are frequently known to lend their prescriptions to friends, such a trade as suggested certainly does not exist. The late Professor Gregory seldom prescribed anything but the well known powder of rhubarb magnesia, and ginger yet patients flocked from all parts of the country to consult him. It is related that a patient in the North of England who proposed making a journey to Edinburgh for this purpose had the doctor's regular prescription offered him by a friend on the spot for half the fee, but was refused against the

temptation. The truth is that though the patient certainly regards the prescription as part of the value received for his fee, he undoubtedly does not regard it entirely in that light.

A medical prescription as a matter of fact is in some respects analogous to a railway ticket. It is not a purchase, it has no intrinsic value, and its worth is only determined by what it will bring. What the traveller pays for is safe arrival at his destination, together with certain comforts on the journey, what the patient pays for is restoration to health. The prescription is thus a token, designed to bring certain results in certain given circumstances, and it is only because the patient is allowed to choose his own pharmacist that the prescription is written so as to be understood by the pharmaceutical profession at large. But at the journey's end the railway ticket must be given up, and when the patient has been cured the prescription ought also to be cancelled. Much harm has been known to result from the continued taking of the medicine after the purpose of the prescription has been served, and many cases of drug addiction can be traced to such a practice.

When the prescription is for a chronic or frequently recurring complaint, and is in itself harmless, there is no objection to the patient being allowed to retain it, but when it consists of more or less powerful drugs, and is designed to combat some particular syndrome it is most desirable that the physician should distinctly state how often it is to be repeated, or, better still, he should give his instructions direct to the pharmacist.

The question of the pharmacist being bound to furnish a copy to the patient on demand is one which hardly admits of a question. The prescription is copied by the pharmacist for his own convenience, it is regarded as a confidential possession, and a copy should never be given to anyone except to the doctor himself."

June 1911

Yours, etc.,

SENIOR, I.M.S.

ZOOLOGICAL NOMENCLATURE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In a recent review in the columns of the *Indian Medical Gazette* on the Bulletin entitled "The Anatomy of Watsonius (*n.g.*) Watsoni of Min" by Ch. W. Stiles and Goldberger, there occur the words "It is about time that some finality was reached in this eternal changing of the name of well known parasites." Whether intentionally or not the words used suggest that the changes in name to which exception is taken are wanton and unnecessary and the opportunity seems favourable for indicating the steps which, during the course of the present century, have been and are being taken to prevent unnecessary changes in Nomenclature and how it is that, in spite of these, some changes must still occur in the future.

In former times anyone who wished to do so considered himself entitled to alter the name of any species, that is to say in the case of species of interest to many, synonyms increased inordinately. Thus the hydatid parasite has been the possessor of over a hundred names. In order to introduce system into this chaos, zoologists after appointing and receiving a report from an international commission (of which Stiles was a member) have during the last few years agreed as a whole to abide by a certain Code of Nomenclature consisting of 36 articles. This was published, with an explanation by Stiles in Bulletin 24 of the Hygienic Laboratory of the United States. It is subject to revision and has undergone some change since it was first promulgated. It is with the object of showing how it is that, partly by reason of and partly in spite of this Code changes in Nomenclature still occur, that the following is written.

But first a few elementary remarks for which apology is offered, may be inserted. They relate to the ideas of genus species and type species. One can imagine primitive man coming across a number of animals which he recognised as being very similar, and which he called something which meant cats. He had made a species—the "cat" species. Similarly experience showed him that there was another set of animals with the same kind of resemblance to one another, and these he called tigers. He had made another species, "the tiger" species. And so in his primitive way he made many species. But when he began to observe more closely he noted, let us imagine, that the cat and the tiger were much alike and he called them all cats. In doing this he had done two things. He had made a genus, the "cat" genus and by calling the genus the "cat" genus, he made the "cat" species the type species of the genus. However much his fellow men might object to his including in his "cat" genus any particular species, they could never object to his including the "cat" species in it. The "cat" species was the type species and could never be turned out of the cat genus.

So turn now to the modern Code of Nomenclature. Under this every animal has two names and two names only, first, a generic name written with a capital letter and, secondly, a

specific name written with a small one, thus *Ancylostomum duodenale* and *Ancylostomum caninum* are two species of the genus *Ancylostomum*.

In each genus one species should be put aside as the type species, and under no conditions can the type species be removed from the genus of which it is the type. Suppose however that a modern and critical examination of the different species which at any particular time constitute an existing genus shows that they are in reality so different that it is obviously wrong to class them together in one genus, then two or more genera must be made out of the old single genus and the old generic name will remain with that section which contains the type species, new names being made for the new genera. At the same time the specific names remain unaltered. The species *matsoni* remains *matsoni* and can be recognised as such whether the generic name is *Amphidroma*, *chladorchis* or *matsoni* as its alternative name shows, in accordance with a useful modern usage, it is now the type species of the genus *rat sonae* and can never emerge therefrom to annoy us again.

A notable example of the splitting up of a genus is that of the genus *Taenia*, originally enormous and full of forms of varying kinds it has suffered amputation after amputation, till in recent times it has, excluding the hydatid tapeworm, been reduced to a collection of two groups of worms, one with hoops on the rostellum and one with the rostellum unarmed. The type species of the genus being the armed *Taenia solium*, the generic name, on the splitting up of the genus, remains with the armed portion, and the unarmed portion has been constituted a new genus *Taenia rhynchus*.

Changes of this kind cannot be avoided, nor are they ones in which a medical man, as such, has any legitimate claim to be heard, for human helminths form an infinitesimal proportion of helminths as a whole and changes in the grouping of the former have to be made according to their structure and not as a matter of medical convenience and a change in genus necessitates a change in name. It is especially in a large and indeterminate genus such as is *filaria*, that these changes are to be expected. They are an indication of accurate modern work, and make for ultimate utility, though in immediate effect puzzling to medical men, who however should be the last to object to changes the result of increased knowledge of parasites.

One of the most important of the articles of the Code of nomenclature is "The Law of Priority," which means that the first name given to a species remains always its specific name. This sounds easy and final. It implies, however, a full knowledge of the literature of the species, and if this is imperfect, subsequent changes of name may be entailed. Suppose for example that it has been taken for granted that a particular animal was first described and named in 1801, the name then given will be accepted as its true name. If, however, some industrious individual finds out that as a matter of fact it was described and named in 1755 then the name given in 1801 is suppressed and cannot be used again for this or for any other animal and the name given in 1755 is the approved name of the animal. During the few years which have elapsed since the International Code has been adopted, it has had the effect of producing in this way many changes of accepted names and it will continue to do so, but ultimately stability will be reached and changes from this cause will cease.

By another rule no two genera in the animal kingdom may have the same name, and by another all names are latinised. The Code published in the Bulletin referred to above has an appendix dealing in detail with the transliteration and latinising of Greek words. It may be useful, as illustrating the above remarks, to point out some of the changes which have occurred in the nomenclature of human helminths and the way in which they have been brought about under the Code.

Filaria sanguineus hominis is trinomial and disappears in favour of *Filaria bancrofti* given by Cobbold in 1877.

The large indeterminate genus *Filaria* has recently had two genera cut off from it, and will doubtless suffer further amputation. *Filaria loa* has become *Foa foa*, and *Filaria volvulus* has become *Oncocerca volvulus*.

Uncinaria has, as a genus, been found incapable of definition. *Ancylostomum* and *Necator* are two genera which have been cut off from it.

Ascaris canis has been decided to belong to a different genus from that containing *ascaris lumbricoides*, and a new genus *Toxascaris* has been formed to contain it.

The genus *oxyuris* has had to be split up. Unfortunately for medical men, the type species and the human species pass into different genera, and that containing the latter has been named *oxyuris*.

A more complicated case of iteration is that of *strongylus subtilis*. So far as human beings go it was first described by Looss in Egypt under this name. Later he removed it and other species into a new genus *Trichostomylus*, among the other species being one *Trichostomylus instabili* described earlier by Railliet from sheep. Looss considered the two forms mentioned to be distinct, judging by the information he obtained about *T. instabili*, but later he was able to make in

actual examination of the individuals from which the species *instabili* was named and was convinced that his and Railliet's species were identical, though *subtilis* was suppressed and the correct name of the worm is *Trichostomylus instabili*. The name *Tschitsch* having been already applied to another genus in the animal kingdom before Owen applied it to *Trichina spiralis* has had to be dropped, and has been replaced by *Trichanella*.

These examples of change in name of human helminths may serve to show that such alterations are now ordered on definite lines and governed a code designed to secure stability by and conformity as opposed to creative individual whim, that the ultimate effect of the Code will be to ensure that change in nomenclature will only take place as the result of change in classification, and that change in Zoological classification now is to a considerable extent necessitated by imperfect or incorrect examination and description in the past, the name for which, if blame there be, is to be laid upon those who put varying forms into a single genus, and not upon those who laboriously sort them out again.

My indebtedness to Dr Leiper of the London School of Tropical Medicine in respect to this question of nomenclature is a large one, and one which I gladly and fully acknowledge.

LONDON, }
May, 1911 }

CLAYTON LANE, M.D. (LOND.),
MAJOR, I.M.S.

ORGANISMS IN DYSENTERIC STOOLS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the April number of the *Indian Medical Gazette* pgs 130, Captain Gillett states that in the stools of 76 cases of dysentery "ciliates were found in four cases and Balantidium colic once."

In Port Blair in 1905, the stools of 920 cases, out of a total of 2,359 of dysentery, were examined microscopically. Flagellates were found in 723 of the cases. Balantidium in combination with Amoeba or flagellates or alone in 7 cases. In one stool a ciliate, other than Balantidium, and introduced in the ablation water was found.

Possibly Captain Gillett would furnish a description of the ciliates, other than Balantidium, he discovered. He would thereby be increasing our systematic and zoological knowledge. The *Trichomonas intestinalis* of Leuckart was described as furnished with a number of cilia which Blanchard (*Pratique de Zool. Medical*) unhesitatingly resumes to be an optical illusion produced by the moving of the undulating membrane. Such an error is very easily committed by anyone working with a comparatively low power.

Yours, etc.,
A. R. S. ANDERSON, M.B. C.M.S.,
Lieut., I.M.S.,
Chief Surgeon, Chittagong

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to Colonel Anderson's letter regarding the occurrence of Ciliate bodies in dysenteric stools, I enclose a copy of the notes made on the cases referred to.

In all cases a piece of mucus was tested out on a slide with a little normal saline solution, and was examined under 100 power. I do not think any of the stools had come into contact with ablation water.

As far as I remember Ciliate bodies were found on one or two occasions in Midnapur in 1907 in stools of apparently healthy prisoners.

As they probably have no causal relationship to dysentery I have not regarded them as of any consequence.

BUXAR, }
27th May 1911 }

Yours, etc.,
W. GILLIATT, M.I.,
Captain, I.M.S.
Superintendent, Buxar Central Jail

COPY OF NOTES ON CASES

1. Buxar Musalman, 11th August 1909.—Stool watery, reddish in colour, containing reddish sloughs and mucus.

(a) Bodies like small amoebæ containing red blood corpuscles, movement straightforward like a worm (●●●), no differentiation of endoplasm and ectoplasm visible.

(b) Flagellates (●) one of which contained a RBC.

(c) Ciliates (●) No ova Cellular exudate

2. Sher Golam Shir, 22nd August 1909.—Stool loose containing some mucus and blood. No amoebæ. Several ciliates (●) Ova of *ankylostomum duodenale* and thread worm. No cellular exudate.

3 Mohabir Pandey 31st August 1910—Has suffered from diarrhoea several times during the last few months and to day there is mucus with the stool. No amoebæ, mucus swarms with *balantidium coli* flagellates and ciliates. Also ova of the headworm. Not cellular exudate.

4 Kavoo Goala, 2nd December 1910—Stool formed with some duty looking mucus. Mucus contains ciliate bodies but no amoebæ. No ova. Cellular exudate.

W GILLETT,
CAPTAIN, I M S

27th May 1911

THERAPEUTIC NOTICES

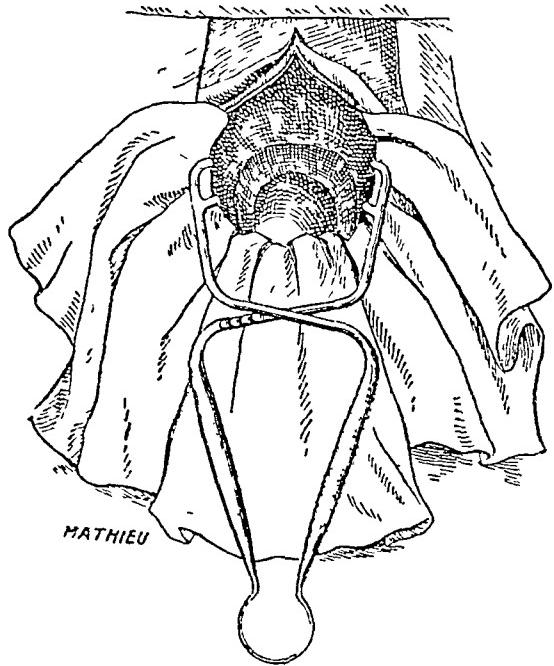
THE HOLBORN SURGICAL INSTRUMENT CO as may be seen in our advertising columns have supplied the outfit used in the well known Military Hospital at Rochester Row, London for treatment of syphilis by SALVARSAN ("606") The methods there used were recently described in JOURNAL OF R A M C, by Major Gibbard and Captain Hillson R A M C, and we are informed that the India Office has also ordered this apparatus.

C HEARSON & Co, LTD of Bermondsey S E, send us an illustrated catalogue of their high speed Centrifuges electric water and hand, manufactured by Leone of Paris. The catalogue gives full details and is recommended to the perusal of all heads of Laboratories in India.

In our November issue we noticed

MATHIEU'S ABDOMINAL RETRACTOR — The accompanying illustration will make quite clear the use and value of this instrument.

The Therapist has a useful article by Dr E Paul of Olmütz on the great value of irrigating the urethra in case of



gonorrhœa with OXYTOCIN, which is reported to have a very speedy action in both chronic and acute cases.

MESSRS KNOLL & CO call attention to their valuable preparations including Diuretin, Bromuril, Styptol, Tannalbin, etc, etc in tablets. Their catalogues are well worth perusal.

Service Notes

DOCTOR JOHN DUNCAN GRECORSON, who accompanied Mr Noel Williamson, Political Officer at Sadya, on the North East Frontier of Assam, in his journey to the Abor country in March, and was killed, along with Mr Williamson, on or about 31st March 1911, was medical officer to some of the tea gardens in Lakhimpur district. He was born in July 1871, educated at Edinburgh Academy, at Sedbergh School, and at Edinburgh University, where he took the degrees of M B, C M, in 1894. After some years spent in private practice at home, he came out to India in 1900. He was much interested in the geography ethnology and natural history of the N E Frontier, an interest which has unfortunately led to his death.

D G C

CAPTAIN ARTHUR DE COURCI CHANSTOUN CHARLES, I M S, died of acute appendicitis at Mian Mir on 7th April 1911. He was born on 7th June 1881, educated at Cambridge and St Thomas' Hospital, took the degree of B A, Cantab, in 1903, the diplomas of M R C S and L R C P, London, in 1906 and entered the service as Lieutenant on 1st February 1908 having reached the rank of Captain so recently as 1st February 1911. The Army List assigns him no war service. He was a nephew of Sir Richard Havelock Charles, K C V O, of the India Office Medical Board.

D G C

SURGEON GENERAL WILLIAM BURN BEATSON, Bengal Medical Service retired, died at Eastbourne on 26th April 1911, aged 85. He was born in May 1825, educated at Guy's and took the diploma of M R C S in 1846, and the degree of M D St Andrews in 1852. Subsequently he took the diplomas of F R C S, England, in 1867, and M R C P, London, in 1884 being elected F R C P, London, in 1901. He entered the Bengal Army as Asst Surgeon on 30th April 1852, became Surgeon on 15th June 1861 Surgeon Major on 30th June 1872, Depy Surg General on 20th December 1878, and retired with a step of honorary rank on 20th December 1883. He served in the first Burmese war, with the Field Hospital of the Burmese force, from 1st February 1853 to November of the same year, receiving the medal and clasp. He was the author of a pamphlet entitled The Indian Medical Service, Past and Present published in 1902, reprinted from the Imperial and Asiatic Quarterly Review of October 1902.

D G C

SURGEON GENERAL HENRY HAMILTON, of the Bengal Medical Service, retired on 7th April 1911. He was born on 4th May 1851, educated at Queen's College Belfast, where he took the degrees of B A in 1872, M D, M C H, and L M S, in 1875, at the Queen's University, and entered the I M S as Surgeon on 31st March 1876. He became Surgeon Major on 31st March 1888, Surgeon Lt Colonel on 31st March 1896, Brigade Surgeon Lieut Colonel on 20th May 1898, being specially promoted for the Tiahs campaign, Colonel on 1st October 1902, and Surgeon General on 24th March 1907. He now retires on reaching the age of sixty. He has a long list of war services Afghanistan 1878-79 SO, action of Charasiyah, operations at and around Kabul, affair of Shekohabad march from Kabul to the relief of Kandahar, and battle of Kunduz, mentioned in despatches G G O No 582 of 1880 medal with three clasps and bronze star, Chitral, 1895, relief of Chitral, medal with clasp, North West Frontier of India 1897-98, operations on the Samana and in the Kuniam Valley during August and September 1897, operations of the flying column under Colonel Richardson, 20th August to October 1897, mentioned in despatches, G G O No 244 of 1898, two clasps Tiahs, 1897-98 mentioned in despatches, G G O No 244 of 1898, promoted to Brigadier Surgeon Lt Colonel, clasp, and China, 1900, medal. He was given a good service pension on 25th October 1902, and a C B on 24th June 1904. His whole service had been passed in military employment.

SPECIAL promotions, such as that of Surgeon General Hamilton for Tiahs have always been very rarely given in the Indian Medical Service. After the Indian Mutiny, five Asst Surgeons were given brevet Surgeonships from 7th September 1858, J Fisher, S B Partidge, H M Greenhow, and R Lard, and one, J W R Amesbury from 14th August 1860. But these promotions were brevet only.

and did not, as the few given in later years have done, confer as the recipients permanent promotion to higher rank, with all its attendant advantages, such as promotion to each higher rank, in turn, long before their contemporaries, who entered the service with them reached these ranks. The only cases in which such special promotions have been given since the mutiny, as far as we can remember, are the following—

(1) SURGEON MAJOR C SUTHORL, Madras, promoted to Brigade Surgeon in 1886 for services in the Burma campaign of 1885-86, subsequently Surgeon General of Madras.

(2) SURGEON LT COLONEL H HAMILTON, Bengal, promoted to Brigade Surgeon Lt Colonel for services in the Tukah campaign on 20th May 1898, who has just retired as Surgeon General.

(3) SURGEON MAJOR T GRAINGER, Bengal, promoted to Surgeon Lt Colonel for services in the Tukah campaign, 20th May 1898, is Colonel, and P.M.O., Burma Division.

(4) MAJOR C C MANFIELD, Bengal, promoted to Lt Colonel for services in China, 29th November 1900, now Colonel and Inspector General of Civil Hospitals, United Provinces and Oudh.

(5) LT COLONEL H B BRIGGS, Bombay, placed on the selected list 2nd October 1900, retired as Colonel, 1st January 1909.

All these officers, it will be seen, reached the rank of Colonel, two that of Surgeon General, while two are now serving as Colonels.

COLONEL CHARLES HENRY BEATSON, of the Bengal Medical Service, retired on 27th March 1911. He was born on 27th March 1851, educated at Edinburgh and Glasgow Universities, took the diplomas of M.R.C.S. and L.R.C.P., Edinburgh, the old "double qual" in 1873, and entered the I.M.S. as Surgeon on 30th September 1876, six months after Surgeon General Hamilton. Like him, Colonel Beatson's whole service has been spent in military employment. He was on temporary half pay from 8th May to 21st December 1882, became Surgeon Major on 30th September 1888, Surgeon Lt Colonel on 30th September 1896, reached the selected list on 4th July 1902, and became Colonel on 16th June 1905. He vacated his appointment as P.M.O. on 16th June 1910 on completion of five years service in the rank, and had since been "in it thicks," on the Unemployed List. He served in Afghanistan in 1878-79, medical and in the Manipur campaign on the North East Frontier in 1891, being mentioned in despatches, G.G.O. No. 355 of 1891, and receiving the medal. He was given a C.B. on 28th June 1907.

Lt COLONEL MANIKSHAW JAMSHEED KILAWALA, of the Madras Medical Service, retired on 16th April 1911. He was born on 8th November 1856, educated at the Grant Medical College, Bombay, where he took the degree of L.M.S. in 1879, subsequently gaining the diplomas of L.S.A. and L.R.C.S., Ed., in 1880, and entered the I.M.S. as Surgeon on 2nd October 1880. He became Surgeon Major on 2nd October 1892, Lt Colonel on 2nd October 1900, and was placed on the selected list on 12th December 1909. He served in Burma in 1886-88 in the operations of the 2nd Brigade, receiving the medal and two clasps, and again in 1890-92, in the Tling Thung column getting another clasp. He had passed in Honours in Arabic and Urdu, also the High Proficiency standard in Persian. He had spent all his service in military employ, and had been on furlough since March 1910.

LIEUTENANT COLONEL HENRY PREST DIMMOCK, of the Bombay Medical Service, retired on 15th April 1911, he was born on 16th January 1857, educated at St. George's, took the diplomas of M.R.C.S. and L.R.C.P. London, in 1879, also subsequently the degree of M.D., Durham, in 1880, and entered the I.M.S. as Surgeon on 31st March 1880. He became Surgeon Major on 31st March 1892, Lieutenant Colonel on 31st March 1902, and was placed on the selected list on 25th April 1905. He served in medical charge of the 2nd Beluch Regiment in the expedition against the Muri tribe, on the North West Frontier of India, in 1880-81. He is the author of a pamphlet on Cutchore Spinal Fever. For several years past he had held the appointment of Principal and Professor of Midwifery, Grant Medical College, Bombay.

So far this year the I.M.S. has suffered badly in the loss of Colonel Leslie, Major Lamb, Lieutenant C. Charles and more recently Major C. J. Robertson Milne who at a time of severe domestic bereavement was attacked with typhoid, lasting over 50 days with relapses.

ROBERTSON MILNE took his degrees at Aberdeen in 1893 and entered the service on 29th January 1895. He served

in the Tirah expedition of 1897-98, and went through several actions and the operations in the Bazar Valley at the end of the year 1897. Medal and 2 clasps, after that he was appointed to civil employ, Bengal, and for some years past was Superintendent of the Central Asylum, at Berhampore. He was an accomplished alienist and his loss is a great blow to that department. Robertson Milne had hosts of friends and they will regret his premature death. *Multus illi bonus flebilis occidit.*

The services of Captain R. T. Wells, M.I., I.M.S., are placed at the disposal of the Home Department.

The services of Captain F. P. Mackie, F.R.C.S., I.M.S., are placed at the disposal of the Home Department.

The services of Major C. H. Bowle Evans, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd class, are placed at the disposal of His Excellency the Commander-in-Chief in India, with effect from the 14th April 1911.

LIEUTENANT COLONEL WILLIAM HENRY QUIK, F.R.C.S., Indian Medical Service, Bombay, has been permitted by the Right Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 25th April 1911.

Lieutenant Colonel Quick was educated at Westminster Hospital and took the M.R.C.S. and L.S.A. in 1880 the M.D. (Brux.) in 1882 and later on the F.R.C.S., England. Before entering the service on 31st March 1883 he had acted in several house appointments at Westminster and at the Queen's Charlotte's Lying in Hospital. In India he served in the Zhob Valley Expedition of 1884 and in Burma in 1885-86. He then entered civil employ in Bombay and has for several years been a leading Surgeon in Bombay and Professor of Surgery at the Medical College. He took long leave out of India on medical certificate in December 1909.

MAJOR C. MILNE, I.M.S. Civil Surgeon, was on study leave, from the 18th September 1910 to the 31st March 1911.

In supersession of Notification No. 2480-II/11, dated the 18th May 1911, it is notified that Captain C. A. Spawson, I.M.S., Civil Surgeon, has been granted by His Majesty's Secretary of State for India extension of leave for three days on medical certificate.

CAPTAIN C. A. JOLLY, I.M.S., whose services have been placed by the Government of India at this Government's disposal to officiate as Civil Surgeon of Mainpuri.

CAPTAIN F. P. MACKIE, I.M.S. whose services have been placed by the Government of India at this Government's disposal to officiate as Civil Surgeon of Bijnoi.

LIEUTENANT COLONEL LIONEL JOHN PISANI, I.M.S., Bengal, has been permitted by the Right Hon'ble the Secretary of State for India to retire from the service subject to His Majesty's approval, with effect from the 10th June 1911.

Lieutenant Colonel Pisani, I.M.S., comes of an old Maltese official family. He was educated at Charing Cross Hospital from which he took the M.R.C.S. and L.S.A. in 1886 and the F.R.C.S., England, in 1893, he was a medical scholar of the Hospital and Demonstrator of Anatomy and Physiology. He entered the service on 1st April 1886, and served in the Hazara Expedition of 1888 (action of Kotkai, medal with clasp). He was employed later in the Bolan Pass and wrote several valuable articles on the prevalence of typhus fever on the North West Frontier. For many years past he has been a well known Civil Surgeon in the United Provinces. He took two years' leave out of India from 10th June 1909.

HIS EXCELLENCY THE GOVERNOR OF BOMBAY IN COUNCIL IS PLEASED TO MAKE THE FOLLOWING APPOINTMENTS:—Lieutenant Colonel H. P. Dimmock, M.D., I.M.S., retired.

Lieutenant Colonel C. H. L. Meyer, M.D., I.M.S., to be Principal, Grant Medical College, Bombay.

Lieutenant Colonel L. D. Childe, M.D., I.M.S., to be Senior Medical Officer, J. J. Hospital, continuing to act as Principal, Grant Medical College, Bombay, in addition, during the absence of Lieutenant Colonel C. H. L. Meyer, M.D., I.M.S., or pending further orders.

Major S. C. Evans, M.B., C.V., I.M.S., to be Professor of Midwifery, Grant Medical College, Bombay, and in charge of the Bu Motlibai and Sir D. M. Petit Hospitals.

THE services of Captain E B Munro, M.B., I.M.S., are placed temporarily at the disposal of the Government of Eastern Bengal and Assam

THE services of Major G E Stewart, M.R., F.R.C.S.E.I.M.S., are placed temporarily at the disposal of the Government of Bombay

THE services of Captain J H Horton, D.S.O., I.M.S., are placed temporarily at the disposal of the Government of Bombay

THE services of Captain G I Drayss, M.B., I.M.S., are placed at the disposal of His Excellency the Commander-in-Chief in India, with effect from the forenoon of the 10th April 1911

THE services of Captain A S M Peebles M.D., I.M.S., are placed temporarily at the disposal of the Government of Bengal for charge of Central Asylum at Berhampore

MAJOR A FFENTON, I.M.S., officiating First Class Civil Surgeon, reverts to his substantive grade, with effect from the 12th April 1911, afternoon

THE following postings and transfers are ordered in the Civil Medical Department, Burma

Major T Stodart, I.M.S., on return from leave to be Civil Surgeon, Mogok, in place of Captain H S Matson, I.M.S., transferred

Captain H S Matson, I.M.S., to be Civil Surgeon, Taunggyi in place of Second Class Military Assistant Surgeon F H O'Leary, transferred

CAPTAIN M H THORNELL, I.M.S., Civil Surgeon of the second class is transferred from Moulmein to Shahabad, vice Major T H Delany, I.M.S.

MAJOR A GWYTHFR, I.M.S., Officiating Civil Surgeon, of Howrah, is appointed to act as Civil Surgeon of the first class, with effect from the 18th April 1911, during the absence, on leave, of Lieutenant Colonel A H Nott, I.M.S.

FOR the post of Superintendent of the Royal Infirmary, Edinburgh, vacant by the retirement of Colonel Wiburton, I.M.S., retired, the following were the service candidates — Sir J Flyer R.A.M.C. (who was successful), Major C C Fleming, R.A.M.C. Inspector General T D Gimlette, R.N., Lieutenant Colonel W E Jennings, I.M.S., Col A Peterkin, A.V.S., Lieutenant Colonel A F Russell, R.A.M.C. All these were on the short list. There were 32 applications in all

THE services of Lieutenant Colonel J Crimmin, V.C., C.I.F., D.I.H., I.M.S., are replaced temporarily at the disposal of the Government of India from the 12th May 1911

His Excellency the Governor of Bombay in Council is pleased to make the following appointments, vice Lieutenant Colonel J Crimmin V.C., C.I.F., D.P.H., I.M.S., deputed to the Military Department, pending further orders —

Major A W Tuke, I.R.C.S. (I), D.P.H., I.M.S., to do duty as Presidency Surgeon, Third District, and in medical charge Schools

MAJOR L T R HUTCHINSON, M.D., I.C., D.P.H., D.T.M. & P., I.M.S., to hold charge of the office of Presidency Surgeon, Thud District, in addition to his own duties from the date of departure of Lieutenant Colonel J Crimmin, pending relief by Major A W Tuke, I.M.S.

CAPTAIN R F STEEL, M.B., B.Ch., I.M.S., to do duty as Resident Surgeon, St George's Hospital, and Professor of materia Medica and Pharmacy, Grant Medical College, Bombay

LIEUTENANT COLONEL J CRIMMIN, I.M.S., and Major L T R Hutchinson, I.M.S., respectively, delivered over and received medical charge of His Majesty's House of Correction

and His Majesty's Common Prison, Bombay, on the 4th May 1911, after office hours

His Excellency the Governor in Council is pleased to appoint Honorary Lieutenant H W de B Prescott to act as House Surgeon J J Hospital, Bombay, during the absence, on leave, of Honorary Captain H A Lafond, or pending further orders

CAPTAIN W T FINLAYSON, I.M.S., Superintendent, Lahore Jails, was granted one month's privilege leave from 17th May 1911

CAPTAIN S H LEE ABBOTT, I.M.S., is transferred as Civil Surgeon to Dalhousie

His Excellency the Governor of Bombay in Council is pleased to appoint Dr R D Dilal to act as Deputy Sanitary Commissioner Southern Registration District and to hold charge of the Vaccine Institute, Belgaum, during the absence on special duty of Major F H G Hutchinson, M.B., C.M. (Edin.), D.P.H., D.T.M. & P. (Cimb.), I.M.S., or pending further orders

LIEUTENANT COLONEL C H L MEYER, M.D., B.S., I.M.S., is granted, from the 22nd May 1911 or the subsequent date of receipt, special leave on urgent private affairs for four months and a half

MAJOR H BENNETT, M.B., C.M., R.Sc. (Edin.), F.R.C.S. (E), I.M.S., acted as First Class Civil Surgeon from the 26th December 1910 to the 9th March 1911 both days inclusive, vice Lieutenant Colonel B B Grayfoot, M.D., I.M.S., on deputation

MAJOR BENNETT was appointed to act as First Class Civil Surgeon with effect from the 19th March 1911, vice Lieutenant Colonel C T Hudson, M.R.C.S., F.R.C.P., I.M.S., on leave

His Excellency the Governor of Bombay in Council is pleased to appoint Major G E Stewart, M.B., F.R.C.S. (E), I.M.S., to act as Second Class Civil Surgeon, Dhulri, vice Captain R F Steel, M.B., B.Ch., I.M.S., pending further orders

His Excellency the Governor of Bombay in Council is pleased to appoint Captain J A Horton, D.S.O., I.M.S., to act as Second Class Civil Surgeon, Ahmednagar, vice Captain Neilar, I.M.S.

CAPTAIN J CUNNINGHAM, M.D., I.M.S., has been allowed by His Majesty's Secretary of State for India an extension of furlough on private affairs for seven months

THE services of Captain T S Beauchamp Williams, M.R., I.M.S., are replaced at the disposal of the Government of India, with effect from the 19th May 1911

LIEUTENANT COLONEL D T LANG, I.M.S., was transferred as Civil Surgeon from Seikot to Murree

THE following Plague Medical Officers were granted privilege leave, viz., Captain A Cameron, I.M.S., for 1 month and ten days, and Captain E J C McDonald, I.M.S., for 26 days

MAJOR W S WILLMORE, I.M.S., Civil Surgeon of Mirzapur, is deputed to Kasauli for training in clinical bacteriology and technique

CAPTAIN E B M NEWLAND, I.M.S., to hold Civil Medical charge of Rurki in addition to his military duties, vice Lieutenant-Colonel A W Dawson, I.M.S.

THE Civil Surgeon of Benares to hold visiting medical charge of the Ghazipur district, vice Lieutenant Colonel Cudell, I.M.S., granted leave

CAPTAIN J E CLEMENTS, I.M.S., has passed out first place in the D.P.H. examination at the new Queen's University, Belfast

CAPTAIN T F OWENS I M S who was appointed to officiate as Chemical Examiner and Bacteriologist Burma, in this department Notification No 306 dated the 14th October 1910 will continue to officiate as Chemical Examiner and Bacteriologist, Burma, in place of Lieutenant Colonel C H Pedenford M D, I M S, who has been granted leave by the Government of India, with effect from the 19th April 1911

The following medical officers have passed the Higher Standard Examination in Bengal in April last—Captain C E Bulteel, I M S Lieutenant G G Jolly, I M S, and Assistant Surgeon E Cordeoroi

LIEUTENANT COLONEL H THOMISON, I M S, and Lieutenant Colonel R Robertson I M S, have been on deputation to undergo military training from 1st April Major H Kukpratich, I M S, acted for Lieutenant Colonel Robertson

LIEUTENANT COLONEL E H WRIGHT I M S was appointed (sub pro temp) Principal, Medical College, Madras

MAJOR C DONOVAN I M S, is due out from leave on 15th August 1911

MAJOR R H FILIOT F R C, I M S, took six months' combined and special leave on urgent private affairs from 5th May 1911

MAJOR T H FOULKS I M S, has been granted one year's leave and Major E M Illington I M S, has gone to Waltair as District Medical Sanitary Officer of Vizagapatam

MAJOR W J NIBLOCK, I M S, got a month's privilege leave in May

MAJOR P P ATAI, I M S, reverted to military employ on 9th April 1911

CAPTAIN W C LONG, I M S, was due back from privilege leave on 16th July 1911

CAPTAIN T W HARLEY, I M S, was due back from 15 months' leave on 10th June, and Captain S Rose on 31st July 1911

CAPTAIN W A JUSTICE, I M S, acted for Lieutenant Colonel H Thomson, I M S, on deputation, as Sanitary Commissioner, Madras

CAPTAIN C A F HINGSTON, I M S, acted as Ophthalmic Surgeon, Madras, vice Major Elliot, on leave

CAPTAIN E A ROBERTS, I M S, is due back from leave on 17th July 1911

AT the London School of Tropical Medicine the following I M S Officers passed the Examination at the end of the 35th session—Capt H Crossle, M D, I M S Capt C C SHAW, M B, P S, I M S, and Major S HUNI, M D, B S, I M S

CAPTAIN M F REANY, M B, D H, I M S Officiating Civil Surgeon whose services have been placed permanently at the disposal of this Administration by the Government of India, Home Department's Notification No 472 dated the 12th April 1911, is appointed to be a Civil Surgeon of the 2nd Class, with effect from the 12th December 1909 vice Lieutenant Colonel W D Sutherland, M D, I M S, Civil Surgeon, 2nd Class, promoted to the 1st Class

LIEUTENANT COLONEL A BUCHANAN, I M S, Civil Surgeon, Amritsar, is transferred in the same capacity to Nagpur

On the termination of his special duty at the Lunatic Asylum, Nagpur, Lieutenant Colonel H E Banatvala, I M S, Civil Surgeon, is posted to the Amritsar District

Under Section 6 of the Prisons Act 1891, as applied to Bihar, the Chief Commissioner is pleased to appoint Lieutenant Colonel H E Banatvala, I M S, Civil Surgeon Amritsar, to the executive and medical charge of the Amritsar District Jail

Privilege leave for three months in combination with furlough for three months under Articles 233(4), 260 and 308 (b) of the Civil Service Regulations, is granted to Captain T G N Stokes M B, I M S, Sanitary Commissioner, Central Provinces, with effect from the 1st May 1911 or the subsequent date on which he may avail himself of it

With the previous sanction of the Governor General in Council Major W H Kenrick I M S, on special duty in the office of the Sanitary Commissioner, Central Provinces, appointed to officiate as Sanitary Commissioner Central Provinces during the absence on leave of Captain T G N Stokes, M B, I M S, or until further orders

With effect from the 10th April 1911, Captain C L Dunn, I M S, to officiate as Deputy Sanitary Commissioner 2nd circle United Provinces, and to hold charge of the current duties of the office of Deputy Sanitary Commissioner, 1st circle, in addition to his other duties

MAJOR L C PECK, I M S, made over charge of the duties of the Jullunder Jail to Mr Dewan Ali on 11th April 1911

CAPTAIN H M MITHUISH I M S Plague Medical Officer, Delhi has been granted combined furlough and study leave for 18 months from 18th May 1911

Brigade Staff—Colonel R J D Hackett, British Service, to be Principal Medical Officer, Karachi Brigade, and Colonel T J O Donnell, British Service, vacated

CORONER D ST J D GRANT, I M S, to be Principal Medical Officer, Deccan and Bengal Brigades

MAJOR B S C THOMPSON I M S Superintendent of the New Central Jail, Calcutta, is appointed to act as Superintendent of the Central Jail, Alipore during the absence on leave of Major M S Emerson, or until further orders

MAJOR F H WAITING, I M S is appointed to act, until further orders as Superintendent of the New Central Jail, Calcutta, vice Major B S C Thompson, on deputation

The services of Captain F C Fraser, M D, I M S, are replaced at the disposal of His Excellency the Commander in Chief

The services of Captain V B Green Armitage I M S are placed temporarily at the disposal of the Government of Eastern Bengal and Assam

The Home Department Notification No 511, dated the 1st May 1911, is hereby cancelled

The services of Lieutenant Colonel J Crimmin A C, I M S are replaced at the disposal of His Excellency the Commander in Chief in India, with effect from the 12th May 1911

The services of Captain G A Jolly, M B, I M S, are placed temporarily at the disposal of the Government of the United Provinces, with effect from the 10th June 1911

CAPTAIN W H DICKINSON, M.D., I.M.S. is promoted Major with effect from 28th January 1911, i.e., he has received accelerated promotion with several others of his own batch who were previously gazetted. Captain Dickinson is Chemical Examiner in Bombay and has been on long leave since November 1909.

MAJOR W D HARWARD I.M.S., Medical Store keeper to Government Councillor, was granted forty days' privilege leave from 15th May 1911, and Assistant Surgeon W J Masterton to hold charge of the Medical Store Department.

The following officers have passed in Peshawar by the higher standard examination held in April 1911—

Captain R C MacWatters, I.M.S., and Assistant Surgeon G R Fido

CAPTAIN R E LLOYD D.Sc., I.M.S., has been nominated a Fellow of Calcutta University.

CAPTAIN C I BRICERI, I.M.S. was granted 18 months' combined leave from 19th March 1911.

CAPTAIN H H THOREOPA, I.M.S., acts as Agency Surgeon, 2nd class, and is posted as Civil Surgeon, Khyber Agency, from 1st April 1911.

MAJOR J W WATSON, I.M.S., an Agency Surgeon of the 2nd class is posted as Agency Surgeon, Alwar, with effect from the 1st April 1911.

CAPTAIN N E H SCOTT I.M.S. an Officering Agency Surgeon of the 2nd class is posted, on return from leave as Residency Surgeon Baghdad, and *ex officio* Assistant to the Political Resident in Turkestan, with effect from the 14th April 1911.

CAPTAIN J McPHERSON, I.M.S., an Officering Agency Surgeon of the 2nd class is granted privilege leave for three months combined with furlough for three months and study leave for eight months, with effect from the 2nd April 1911, under Articles 233 and 308 (b) of the Civil Service Regulations and the Regulations prescribed in the Notification by the Government of India in the Army Department, No. 31, dated the 13th January 1911.

THE services of Captain F C Finsen, M.D., I.M.S., are placed temporarily at the disposal of the Government of Madras.

HIS Excellency the Viceroy and Governor General has been pleased to appoint Assistant Surgeon Khan Bahadur Drudhu Rahman M.B., of the Bengal Establishment, to be an Honorary Assistant-Surgeon on His Excellency's personal staff, with effect from the 23rd November 1910.

CAPTAIN V B NELSFIELD I.M.S. to officiate as Deputy Sanitary Commissioner, 1st Circle, from the 5th May 1911, i.e. Captain C L Dunn, I.M.S.

MAJOR W M PEARSON I.M.S., Civil Surgeon, was on study leave from the 17th October 1910 to the 23rd March 1911.

CAPTAIN C A SPRAWSON, I.M.S., Civil Surgeon, has been granted by His Majesty's Secretary of State for India extension of leave for one month on medical certificate.

On return from the combined leave granted him by Order No. 1974 dated the 19th August 1910, Major C H Bensley, I.M.S. is appointed to officiate as Superintendent, Central Jail Nagpur.

Privilege leave for three months, in combination with furlough for six months and study leave for nine months, under Articles 233 (i) 260 and 308 (b) of the Civil Service Regulations, and Rule 2 of the Study Leave Rules is granted to Lieutenant Colonel W B Lane I.M.S., Inspector General of Prisons, Central Provinces, with effect from the 1st June

1911, or the subsequent date on which he may avail himself of it.

MAJOR F O N MITT, M.P., C.M., I.M.S. on special duty in the office of the Inspector General of Prisons, Central Provinces, is appointed to officiate as Inspector General of Prisons, Central Provinces, during the absence on leave of Lieutenant Colonel W B Lane, I.M.S., or until further orders.

LIEUTENANT F F S SMITH to be specialist in Ophthalmology 2nd (Rawal Pindi) Division, with effect from 18th April 1911.

CAPTAIN K S SINGH, I.M.S. was granted 1 month and 11 days' privilege leave from 5th June 1911.

The services of the undermentioned Indian Medical Service officers are placed temporarily for plague duty at the disposal of the Government of the United Provinces—

Captain E Bisset, M.L.
Captain A N Dickson, M.B.
Captain R S Townsend, M.L.
Lieutenant T D Munson

CAPTAIN E C HODGSON I.M.S., Health Officer, Simla, is appointed to act as Assistant Director, Central Research Institute, Kasauli, during the absence on leave of Major E D W Gieeg, I.M.S. or until further orders.

CAPTAIN R A NEEDHAM, M.B., I.M.S., is appointed to act as Health Officer, Simla, during the absence, on deputation, of Captain E C Hodgson, I.M.S., or until further orders.

LIEUTENANT COLONEL B B GRAYFOOT M.D., I.M.S., and Captain W O'S Murphy, D.P.H., I.M.S., respectively delivered over and received charge of the Deputy Sanitary Commissioner Sind Registration District, on 1st May 1911 before office hours.

MAJOR H A FORBES KNAPTON I.M.S., and Captain A F Hamilton M.B., F.R.C.S., I.M.S., respectively delivered over and received charge of the office of the Deputy Sanitary Commissioner Central Registration District, Bombay, on 27th April 1911 after office hours.

MAJOR P S C MORE, I.M.S. made over charge of the Campbellpore Jail to Chaudhri Bukat Ali, M.B., on 28th April 1911.

CAPTAIN N S SODHI, I.M.S., obtained 13 days' privilege leave from 1st June.

MILITARY ASSISTANT SURGEON T H BONNER, Civil Surgeon, Garo Hills, is vested with powers equivalent to those of a Magistrate of the Third Class, as defined in the Code of Criminal Procedure (Act V of 1898), and with the powers of an Assistant Commissioner under the rules for the administration of the Garo Hills district prescribed under Section 6 of the Scheduled Districts Act, XIV of 1874, to be exercised within the Garo Hills district.

LIEUTENANT COLONEL W VOST, I.M.S., Civil Surgeon, 2nd class to officiate as Civil Surgeon, 1st class, from the 18th April 1911, i.e. Lieutenant Colonel J Moirwood, I.M.S., on leave.

MAJOR P DRE, I.M.S. Civil Surgeon Mandalay, is appointed to officiate as a First Class Civil Surgeon with effect from the 13th April 1911, before noon.

MILITARY ASSISTANT SURGEON H MANSFIELD made over charge of the Noakhali Jail to Assistant Surgeon Rajani Kanta Dutt, on the afternoon of the 18th April 1911.

ASSISTANT SURGEON BHARAT CHANDRA DHAR made over charge of the Faridpur Jail to Military Assistant Surgeon H Mansfield on the afternoon of the 21st April 1911.

In the month of June there were several I M S dinners, &c., at the Caledonian United Service Club in Edinburgh an I M S dinner was held, and among those present were Sir Alexander Christison But (in the chair), Surgeon General Bulle, C I E, Surgeon General Pinkerton, K I P, Surgeon General Turnbull, K I S, Surgeon General Hay, Surgeon General Sinclair, C S I, Colonel Warburton, C S I, Colonel Arnot, Colonel MacLaren, Colonel Wyville Thomson, Colonel Julian Smith, Colonel Lamont, Sir William Hooper, K I S and a number of young officers on the active list,—Major Fleming, Major Munro, Major Dens, Captains Munro, Cook, Rumbold, Webb, Mansell, Wernicke, and Swan.

THE annual dinner of the Indian Medical Service took place this evening in the chalet of the United Service Club. Surgeon General Lukis presided, and the following officers were present—Colonels French Mullen, Bamber and Hendley, Lt Cols Woolbert C H James, H Smith, H B Melville, C Ewen, O'Kealy, Brind, and O'Gorman. Majors B G Seton Knox, Wilkinson, Due, Browning Smith, H Roberts, Austin Smith, Christopher, H Melville James G M Smith, and Jiv Gould, Captains A M Wilson, Hodgson, O'Leary, Hume Grisewood, Needham, Halliday, Mills, Hebbert, Coulthorpe, O G Kirwan, and R N Chopra.

The toasts of the evening were the Indian Medical Service and the Director General, by Colonel French Mullen, and responded to by Surgeon General Lukis. Major Gould having arranged the dinner and other details. Colonel Bamber proposed his name in a short speech to which Major Gould made a suitable reply.

MAJOR H GIDDY, I M S, has recently taken the diploma of M R C P, Edinburgh, also become F R S (Edin.), and taken the Oxford diploma in Ophthalmology.

AT the end of the Royal Army Medical College session on 28th April last, Lieutenant A R S Alexander, I M S, took (a) the Parkes Memorial prize in Hygiene, (b) the Raithal Mutin gold medal in Tropical Medicine, (c) the Marshall Webb medal and cheque for Military Medical Administration, (d) the first Montefiore medal for Military Surgery, and (e) the Heberlein prize of £20. Lieutenant K G Pandala took the second Montefiore prize in Surgery, leaving two prizes for two men in the R A M C.

CAPTAIN G D FRANKLIN, I M S, M B (Cantab.), and Captain F P Mackie, I R C S, have been admitted members of Royal College of Physicians, London.

MAJOR W W CLEMESHA, M D, D P H, I M S Sanitary Commissioner Bengal, has been elected Fellow of the Royal Sanitary Institute.

CAPTAIN G A JOHNSON, M B, I M S, has been admitted a Fellow of the Royal College of Surgeons in Edinburgh.

THE Home Department Notification No 120 Jails, dated the 15th May 1911, replacing the services of Captain F C Fraser, M D, I M S, at the disposal of His Excellency the Commander in Chief, is hereby cancelled.

THE services of Captain F P Mackie, F R C S, I M S, are placed temporarily at the disposal of the Government of the United Provinces.

THE services of Captain R T Wells, M B, I M S, are placed temporarily at the disposal of the Government of the Punjab.

MAJOR ROGER P WILSON, I M S, has passed the colloquial examination in Bengali.

CAPTAIN R BROWN, I S M D, has been transferred to Balasore as Civil Surgeon and his place at Dumkha has been filled by Military Assistant Surgeon A A E Baptist.

MILITARY ASSISTANT SURGEON FOX is transferred from Balasore to the General Hospital, Howrah.

ASSISTANT SURGEON S N NEOCI has been posted to Purulia as acting Civil Surgeon.

CAPTAIN A S M PFEIFFER, I M S, is appointed, until further orders, to act as Superintendent of the Central Lunatic Asylum, Beliaghur, with effect from the 17th May 1911.

CAPTAIN H M BROWN, I M S, is appointed, until further orders, to act as Deputy Sanitary Commissioner, Bengal and Orissa Circle, with effect from the forenoon of the 23rd May 1911.

CAPTAIN GEO MCNAULSON, I M S, and Captain E G C Maddock have been admitted F R C S, Ed.

MAJOR T E WATSON, I M S, has obtained the diploma Public Health, R C S, Ireland.

LIEUTENANT COLONEL P CARR WHITR, Indian Medical Service (Madras), and Agency Surgeon of the Second Class, is granted privilege leave for one month, with effect from the 16th May 1911.

RAJ SAHII SHIR DITTA, Senior Sub Assistant Surgeon, Kotah is appointed to hold charge of the current duties of the office of Agency Surgeon, Kotah and Bhallowa, in addition to his own duties, with effect from the 16th May 1911, and during the absence on privilege leave of Lieutenant Colonel P Cari White, Indian Medical Service, or until further orders.

THE privilege leave granted to Major R F Standage, Indian Medical Service (Bombay), an Agency Surgeon of the Second Class, by Notification No 1250 Est A, dated the 2nd May 1911, is extended by four days.

LIEUTENANT COLONEL P J LUMSDEN, Indian Medical Service (Bengal), an Agency Surgeon of the Second Class, is granted privilege leave for one month and twenty nine days combined with furlough for six months and five days, under Articles 233 and 308 (b) of the Civil Service Regulations, with effect from the 5th April 1911.

MAJOR C R STEVENS, M D, I R C S, I M S, Professor of Anatomy, Medical College, Calcutta, and Surgeon to the College Hospital, is granted privilege leave for three months with furlough for three months in continuation, with effect from the afternoon of the 24th May 1911.

CAPTAIN E O THURSTON M I, F R C S, I M S, is appointed to officiate as Professor of Anatomy, Medical College, Calcutta, and Surgeon to the College Hospital, during the absence on leave, of Major C R Stevens, M D, F R C S, I M S, or until further orders.

THE services of Lieutenant Colonel C F Fearnside, M B, I M S, Senior Medical Officer, Port Blair, are replaced at the disposal of the Government of Madras.

MAJOR J M WOOLLEY, M B, I M S, is appointed to be Senior Medical Officer, Port Blair, with effect from the date on which he assumes charge of his duties, and Captain G Holroyd, I M S acts as Superintendent, Central Jail, Bhagalpur, since Major Woolley.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles Letters, and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

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BOOKS, REPORTS, &c., RECEIVED —

Sir Robert Boyce's Yellow Fever (T Murray)
Indian Museum Reports
Asylum Reports Punjab

Bengal
I B & A
Blakelock's Military Hygiene (Baillière Tindall & Cox)
Green's Pathology (Baillière Tindall & Cox)
Scientific Memoirs, Nos 43, 44 and 45
Kocher's Operative Surgery (A & C Black)
Radium By D Turner (Baillière Tindall & Cox)
Fowler's Biological Chemistry (F Arnold)
R Miller's Medical Diseases of Children (Wright & Sons)
Mumford's Practice of Surgery (W B Saunders & Co)
Ander's Medical Diagnosis (W B Saunders & Co)

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Original Articles

REVIEW OF A YEAR'S MEDICO-LEGAL WORK IN THE CALCUTTA MORGUE, 1910

By O. ST. JOHN MOSES, M.D., D.Sc.,
F.R.C.S., F.R.S. (E.)
Captain, I.M.S.

Police Surgeon of Calcutta, and Professor of Medical Juris Prudence, Medical College, Calcutta

DURING the year under review 283 cases were sent up by the police for *post-mortem* examination, as cases in which death appeared to occur under more or less suspicious circumstances

TABLE I

Distribution of cases according to months and quarters of the year—

January	23	= 61 in the 1st quarter
February	13	
March	25	
April	28	
May	24	= 70 in the 2nd quarter
June	18	
July	19	
August	24	= 63 in the 3rd quarter
September	20	
October	18	
November	27	= 89 in the 4th quarter
December	44	
TOTAL	283	= 283

TABLE II

Number of cases according to sex—	
Males	185
Females	98
TOTAL	283

TABLE III

Number of cases according to race—	
Hindu	
Mahomedan	196
European	45
Eurasian	13
Chinese	7
Jew	2
Indian Christian	1
Doubtful or unknown	18
TOTAL	283

TABLE IV

Number of cases according to age periods—	
At or about the time of birth	15
Up to and including 1 year of age	3
Above 1 and up to and including 5 years	7
" 5 years	10
" 10 "	15
" 15 "	20
" 20 "	25
" 25 "	30
" 30 "	35
" 35 "	40
" 40 "	45
" 45 "	50
" 50 "	55
" 55 "	60
Carried over	265

Above 60 years	Brought forward including 65 years.	265
" 65 "	" 70 "	6
" 70 "	" 75 "	5
" 75 "	" 80 "	0
Of "unknown" age (<i>i.e.</i> , where age could not be made out owing to decomposition or other cause)	.	1
		6
TOTAL	...	283

TABLE V

Number of inquests held

The City Coroner held an inquest in .. 239 cases
No inquests were found to be necessary in 44 "

TOTAL	283
-------	-----

TABLE VI

The viscera preserved at the time of *post-mortem* examination were disposed of as follows —

Sent to the Chemical Examiner to Government for analysis	175
Destroyed after disposal of the case, under instructions from the Commissioner of Police	108
TOTAL	283

I have introduced the plan of preserving the viscera in the usual manner and with the usual precautions in all cases. In such instances as afford evident signs of poisoning, or where, on the other hand, although no naked-eye appearances of poisoning are present, the police report points to a possibility of some poison having been used, or where a suspicion arises owing to the absence of manifest cause of death, the viscera are despatched at once to the Chemical Examiner. If, however, death is found to be clearly due to natural causes or if the unnatural cause (being other than poison) is quite obvious, and there is at the same time no suspicion of poisoning in the police report or in the *post-mortem* appearances, the jar containing the viscera is preserved carefully. The viscera are retained pending advice from the Commissioner of Police either for destroying after disposal of the case judicially, or for forwarding to the Chemical Examiner (should a suspicion arise later or any clue be obtained by the police pointing to the use of a poison). This I consider a plan with advantages over that according to which the viscera used to be preserved only in such cases as appeared to the Police Surgeon at the time of *post-mortem* examination to require immediate forwarding to the Chemical Examiner. The only (?) disadvantage in the new method is that it involves an increased expenditure of preserving fluid which, in most cases, is rectified spirit.

TABLE VII

Result of Chemical Examiner's analysis in 175 cases
Poison found (including cases in which alcohol only as differing from other poisons found) in 83 cases
No poison found in ...

... 92 "

TOTAL	175 cases
-------	-----------

TABLE VIII

Analysis of the 83 cases of poison found by the Chemical Examiner —

Opium found in .	47 cases
Alcohol only	12 "
Morphine "	5 "
Opium and Alcohol "	2 "
White Arsenic .	2 "
Yellow Arsenic	2 "
Cyanides (generally K C N)	2 "
Carbolic Acid	2 "
Morphine and Alcohol	2 "
Strychnine	1 case
Yellow Oleander .	1 "
Cocaine "	1 "
Arsenic and Strychnine	1 "
Strychnine and Aconite	1 "
Opium and Asafetida	1 "
Opium and Yellow Arsenic ..	1 "
TOTAL	83 cases

Attention need hardly be called to the great preponderance of opium cases over all other cases of poisoning taken together. In over 72 per cent of all the opium cases the drug was used suicidally, exclusive of the cases in which opium was used in combination with other poisons, such as yellow arsenic! Further comments on this point will be made later under the heading Suicide.

TABLE IX

The total number (283) of cases that were sent up for post mortem examination, classified according to nature of death —

I — Natural causes —

Cases where no inquest was held	38
Cases in which an inquest was held	53
	—
	91

II — Violent deaths —

(Including deaths by poisoning)	192
	—
TOTAL	283

TABLE X

The 192 violent deaths classified —

1 Deaths by accident or misadventure	74
2 Suicidal cases (including one opium case said to have been "without suicidal intent")	87
3 Homicidal	15
4 Doubtful (on the evidence produced)	24
5 Due to rash and negligent acts (generally without criminal intent)	7
6 Due to violence sustained during the riots of December 1910	5
TOTAL OF VIOLENT DEATHS ..	192

NOTE — The classification in Tables IX & X is based on medical opinion in all instances where no inquest was held, and on medical opinion and verdict of Coroner's jury in cases where an inquest was held.

Analysis of the deaths due to natural causes

The cause of death in these cases was one or other of the following — Heart disease, rupture of a diseased heart, perforation of a diseased aorta (with aneurysm), embolism of the pulmonary

arteries, acute cerebral congestion, cerebral apoplexy meningitis, septic meningitis, tumour in the brain, pulmonary, tuberculosis, haemorrhage from the lungs, acute congestion of the liver, peritonitis, acute septicaemia following septiperitonitis, dysentery, tetanus, etc.

In a few cases alcohol was found in the viscera by the Chemical Examiner, and in one instance morphine and alcohol were discovered. In both these, however, death was returned as due to 'natural causes' on the medical and general evidence, death not having been caused by the poisonous substance discovered. Again, in one case, there were evident *post-mortem* signs of some irritant poison having passed through the system, but the death was returned as from 'natural causes' inasmuch as the Chemical Examiner failed to discover any poison in the viscera and as on the general evidence no suspicion arose in the mind of the jury with regard to foul play.

TABLE XI

Analysis of the 71 accidental (violent) deaths

These may be arranged in the following manner according to the cause of death —

1 Poisons —

(1) Opium	6
(2) Coal (from charcoal fires)	2
(3) White Arsenic	1
(4) Yellow Arsenic	1
(5) Strychnine	1
(6) Carbolic Acid (mistaken for Glycerine)	1

2 Motor car accidents	12
3 Falls from a height (in one case under the influence of alcohol)	11
4 Tramway accidents	8
5 Burns	8
6 Drowning	6
7 Carriage accidents (including 1 case in connection with the festival of the Ruth Cai)	5
8 Railway accidents	4
9 Falls and other forms of accidental violence occurring on boardship	3
10 Fall on a person of a weighty object from a height	1
11 Carriage and tramcar collision	1
12 Bullock cart accident	1
13. Bicycle accident	1
14 Suffocation	1
15 Exposure after over indulgence in alcohol	1
16 Accidental wounds becoming septic and followed by acute septicaemia	1
17 Accidental wounds followed by tetanus	1
TOTAL	71

TABLE XII

Analysis of the 67 suicidal (violent) deaths

(1) Opium	34 (over 50 per cent of all cases of suicide)
(2) Morphine	2
(3) Cyanides	2
(4) White Arsenic	1
(5) Yellow Arsenic	1
Carried over	40

	Brought forward	40
1 Poisons—		
(6) Yellow Arsenic and Opium	1	
(7) Carbolic Acid	1	
(8) Alcohol	1	
	43 (i.e., 64 per cent of the whole)	
2 Hanging	19	
3 Drowning	1	
4 Gunshot	1	
5 Cut throat	1	
6 Fall from a height	1	
7 Burns	1	
TOTAL	67	

Notice the extraordinary preponderance of cases of "opium self-administered" over all others taken together. The Coroners' juries have time and again drawn attention to this matter and have constantly added "unders" to their verdict suggesting the desirability of legislation for restricting the sale of poisons in general and of opium in particular. While on the one hand it would be very highly desirable that the sale of such an effective and popular poison as opium should have certain restrictions placed upon it, at any rate so far as its sale to minors is concerned, yet on the other hand, it is to be doubted whether such a measure would have material effect in diminishing the number of suicidal deaths. For would not, let us say, suicidal hangings increase in proportion as now they constitute the not inconsiderable percentage of 27.4 of the total number of cases? If difficulties can be put in the way of obtaining opium measures cannot perhaps be very readily adopted to interfere with intending suicides obtaining *dhoti* or *sari* cloths for twisting and applying as a ligature round the neck. Still this does not do away altogether with the question of putting the favourite means of self-destruction so far as possible out of reach of the suicidally inclined. Besides opium and hanging the other methods mentioned in the table are severally of minor importance. Taken together they account in all for 14 cases in the year, 9 belonging to the group of poisons and 5 to diverse other methods.

The motives for committing the crime, so far as the Calcutta statistics for 1910 show are the usual ones which impel the weak-minded to seek destruction at their own hands. Yet what does not fail to strike one in this matter is the not insignificant number of instances in which comparatively trivial causes account for the offence, such as a mother-in-law's reprimand for inattention to household duties on the part of a young daughter-in-law or a husband's refusal of his child-wife's request to be allowed to visit her father's house on a particular day and so on. This surely points to an element of the hypersensitive and neurotic in the temperament of the race to which most of the suicides belonged. In

this connection I will analyse the number of opium suicides and of those by hanging according to sex, age, etc., and the result may be noted.

TABLE XIII

I—Opium suicides	35
(A) According to sex	{ Male 20 Female ... 15 { Prostitutes 6 Others . 9
	35
(B) According to age periods	Males Females
From 10—20 years of age	4 6
" 20—30 "	7 5
" 30—40 "	7 3
" 40—50 "	1 1
60 "	1 0
	20 + 15 = 35
II—Suicides by hanging	19
(A) According to sex	{ Males 10 Females 9 { Prostitutes 3 Others 6
	19
(B) According to age periods	Males Females
From 10—20 years of age	0 5
" 20—30 "	3 4
" 30—40 "	3 0
" 40—50 "	4 0
	10 + 9 = 19

Prostitutes account for 17 per cent of the total number of suicides and for 41 per cent of the female suicides by these two favourite methods of committing the crime. Again, 20 out of 24 female suicides (i.e., 83.3 per cent) were of an age below 30 years. Whereas out of the 30 male-suicides only 14 (i.e., 46.6 per cent) were below 30 years of age. That is to say, of young suicides there were nearly twice as many females as males.

What then is the practical indication offered by such statistics in the matter of prevention? Surely the raising of the sisterhood of the *demi-monde* in moral and social status, and the more liberal education of the young female of the country and her early emancipation.

TABLE XIV

According to race the 67 cases of (violent) death by suicide are divided thus—

Hindu	61
Mahomedan	2
European	2 { Gunshot, wound head, under the influence of alcohol 1 Fall from a height 1
Eurasian ..	1 (Alcohol)
Jew	1 (Opium)
	67

Perhaps the fact of there having been over 30 times the number of Hindu suicides as compared with Mahomedan is not to be accounted for only by the excess of Hindu over Mahomedan population in Calcutta. Other factors

bearing on race and on temperament, probably play a part

TABLE XV

Analysis of the 15 homicidal (violent) deaths according to mode of occurrence —

Stabs	4
Kicks, blows, etc., and falls in consequence	3
Strangulation	3 (All victims prostitutes)
Throttling	2 { Newborn child
Lathi blows	2
Gunshot	1
	—
	15

This table offers no room for discussion. There is no common factor at work in these cases and no particular preponderance of one mode of occurrence over others. The causes reveal nothing worthy of note for they are just the usual ones impelling the uncontrolled mind to acts of homicide. Homicides in 1910 contributed not quite 8 per cent to the total number of violent deaths, that is, if we exclude the 5 cases which occurred during the riots of December. These cases, though due to homicidal acts, were still of a somewhat different nature as they occurred during a breach of the public peace, that is, in times of riot and were characterised by an absence of personal motive.

TABLE XVI

The 24 cases of (violent) death classified as 'doubtful' in para IX, represent those cases in which on the general evidence adduced the jury found it impossible to arrive at a definite conclusion as to whether the death was of an accidental, suicidal, or homicidal nature. In such cases what is known as an open verdict was returned in accordance with the medical opinion, e.g., "death due to irritant poison, but on the evidence before us, we are unable to say whether it was self-administered or not," or to "shock and haemorrhage due to fracture of ribs and rupture of the liver but how caused we are unable to say"—

Poisons—

Of these 24 cases —

Opium poisoning accounted for	8	deaths
Strychnine	1	
Irritant poison (unknown nature)	1	
Morphine	1	
Yellow Oleander	1	
	—	
Drowning	12	
Violence of a mechanical nature	4	
Motor car	2	
Carriage	2	
	—	
	24	

TABLE XVII

Of the 7 cases which were returned by the coroner and his jury as cases of death due in some manner to

lasciviousness and negligence (without criminal intent), the following is the analysis—

Carriage and tram car collision	1
Carriage	3
Runaway horse	1
Motor car	2
	—
	7

TABLE XVIII

The following are a few discoveries of interest from the point of view of pathology and morbid anatomy made in the cases that came to the *post mortem* table—

I.—Rupture of the internal organs due to violence alone

Liver	4 cases
Spleen	1 "
Liver and spleen	1 case

II.—Perforation of large blood vessels due to disease alone, and rupture of heart and large vessels due to violence supervening on a diseased condition of the parts —

	Perforation	Rupture
Right auricle of heart		1
Right pulmonary vein		1
Thoracic aorta, 1st part	1	
Abdominal aorta	1	

III.—Disease of heart and blood vessels

	Endocarditis	Atheroma
Right auricle	1	
Thoracic aorta, 1st part		10
Thoracic aorta, 2nd part		
Mitral valve		

Aneurysm Ulceration

Right auricle		
Thoracic aorta, 1st part		
Thoracic aorta, 2nd part	1	
Mitral valve		4

IV.—Abnormalities of (a) disease

	Liver	Spleen	Kidney	Ovary	Brain
Abscess	1	1	1		
Stone—Gall-bladder	4		1		
Cirrhosis	10			3	
Waxy degeneration	1				
Fatty infiltration	1				
Fatty degeneration	1				
Infarct			1		
Cyst	1				4
Granular contracted			3		
Tumour					1

NOTE.—*Gall-stones*—In 283 cases only 4 cases of gall-stones were discovered, making a percentage of 1.4 of the total number of autopsies, as compared with 5.9 recorded in Philadelphia.

(b) In regard to weight,—

Liver—The weight of the liver varied between 22 oz and 91 oz, taking into account only adult cases

Spleen—The smallest adult spleen that came under notice weighed 2 oz, and the largest 23½ oz

ON THE POSSIBILITY OF TWO DISTINCT VARIETIES OF RELAPSING FEVER SPIROCHAETAL INFECTION EXISTING IN INDIA

BY H STOTT, M.B., B.S. (Lond.),

LIEUTENANT, I.M.S.

As is well-known the term relapsing fever includes infections in different parts of the

world by different varieties of the relapsing fever group of spirochaetes

At least four types of this organism are at present very generally recognized to be the cause of relapsing fever, viz —

- (i) S Recurrentis in Europe
- (ii) S Carteri in Asia
- (iii) S Duttoni in Africa
- (iv) S Novyi in America

It is, however, only to be expected that increased scientific investigation will prove this rough geographical classification to be to some extent fallacious, and will either bring to light fresh varieties of these spirochaetes or will modify our ideas as to the distribution of those already known.

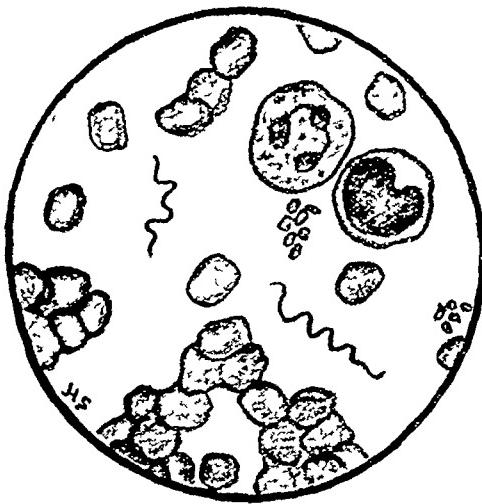
It was my good fortune, whilst attached to the 125th Native Rifles in Bangalore from December 1909 to April 1910, to see two distinct cases of this disease, and under circumstances which seemed to suggest differences in the type of organism responsible for the infection.

It will perhaps first be best to give a brief clinical history of the two cases, and then to shortly review these possible differences.

CASE I

Riflemen, Peeth Singh, was sent on 13th October 1909, as a sick attendant with a phthisis case up to Jaipur, Rajputana. He says whilst away, he often had bad fever. He was frequently bitten by mosquitoes, and also during the train journey by many bed bugs.

On 13th December 1909 — He arrived back in Bangalore and came straight from the railway station into the segregation tents in the hospital compound, bringing all his belongings with him, and without any previous visit to the regimental lines.



From a blood film, shewing two relapsing fever spirochaetes of Case I. Average length of those examined 16μ . Red blood cells, plattetes, one polymorphonuclear, and one large mononuclear leucocyte are also seen. Drawn to scale.

Every case returning from leave, etc., was at this time brought straight from the station to the tents for ten days, isolation as a precaution against the introduction of infectious disease.

On 14th December 1909 — In the evening, his temperature rose and he was taken into hospital. I will not

here go into the difficulties we had with the diagnosis, and how malaria, gonorrhœal arthritis, intra-lobular pneumonia, hepatitis and Malta fever were all successively thought of and one by one finally excluded. It was not until 31st December 1910 that relapsing fever was considered—and only on 13th January 1911, that this disease was confirmed by the discovery of the spirochaete in his blood.

To continue the tale of his symptoms—

After his admission on 14th December 1909, no malarial parasites, nor signs suggestive of malaria were found in several blood films, and quinine had no effect on his pyrexia. He was noted to have a hardish spleen just palpable, but no enlargement of the liver.

On 17th December 1909 — He complained of excruciating pain in the right shoulder joint, and his liver was found to be enlarged and soft and tender one inch below the costal margin. The connection between the liver and the shoulder joint pain is interesting. His motions were normal. Gonorrhœa was excluded. Hepatitis was diagnosed.

On 18th December 1909 — Liver the same, spleen enlarging, and is now softish and $2\frac{1}{2}$ inches below costal margin.

On 19th December 1909 — Critical sweat in the morning. Condition much improved. Liver not palpable. Spleen much smaller.

On 25th December 1909 — Much better, tongue clean, appetite back, thinking of sending him out. Liver and spleen not palpable.

On 27th December 1909 — Severe rigor, general body pains, especially across the epigastrum.

On 28th December 1909 — Severe epigastric pains continue, especially over liver and spleen. The former is not enlarged, the latter is $1\frac{1}{2}$ inches below costal margin and very tender. Thrice sick.

On 29th December 1909 — Spleen very tender and two inches below costal margin, liver normal. No malarial corpuscles. No total increase in the white cells, but a differential count to day shews a relative polymyeloid nuclear leucocytosis. Poly's 89 per cent. Large mono nuclears 2 per cent. Small mononuclears 9 per cent.

On 30th December 1909 — Epistaxis. Severe pains over liver and spleen (which latter now reaches the umbilicus). Pains are also present in the nape of the neck and loins, and also in both wrists which are swollen. Relapsing Fever.

On 31st December 1909 — Epistaxis. Slight yellowish conjunctive.

On 1st January 1910 — Definite jaundice of conjunctive. Critical sweat with instantaneous amelioration of symptoms.

On 7th January 1910 — Jaundice practically gone. Spleen very small. Patient thin but well and hungry.

On 13th January 1910 — Severe rigor and pains in epigastrum, loins and thighs. Spirochaete found in blood film, confirmed at the Pasteur Institute, Kasauli.

On 15th January 1910 — Cannot raise left arm, pain so bad in shoulder. Vomited once. Spirochaete again found.

On 16th January 1910 — Pain over enlarging spleen and unenlarged liver. Spirochaete found.

On 17th January 1910 — All pains ceased this morning with the fall in temperature and the critical sweat. During his attack the spleen enlarged to the same size as before and was decidedly painful. The liver was not palpable. On each day of his fever, the patient had a slight rigor between 2 and 5 p.m.

Subsequent to this date convalescence was well established and the patient rapidly recovered.

This first case then, with its severe epigastric, hepatic and splenic pains, its jaundice and its progressive enlargement of the liver and spleen during the fever, with a return to their normal size during each apyrexial interval,

forms a beautiful example of the so-called abdominal type of relapsing fever.

It is to be noted that the patient was severely ill during each bout of pyrexia, but that the moment this temperature commenced to fall, at that moment the patient was to all intents and purposes well.

As regards his blood—the spirochaetal infection was not heavy, indeed the organisms were extremely hard to find, there was no total leucocytosis—whilst the average differential count of many dozens of films taken at all periods of the pyrexia was quite normal.

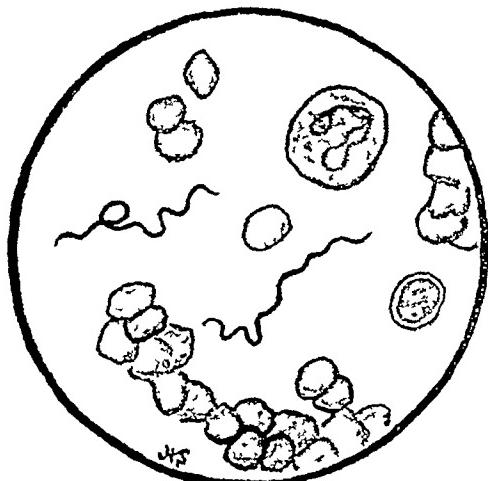
CASE II

On 25th January 1910—Recruit, Ram Kumar Singh, reported sick from the lines with shivering and sweating. He complained of no pains anywhere.

On 26th January 1910—No malarial parasites were discovered and quinine was found to have no effect on his pyrexia. He vomited twice, and complained only of being feverish, without any headache or other trouble. His condition continued the same, i.e., feverishness without any other complaint until

On 31st January 1910—When his crisis appeared and immediately his condition became of the utmost gravity. He broke into a severe sweat, he vomited repeatedly, until exhaustion supervened. He became cold and clammy and collapsed, restless and slightly delirious. His temperature fell to 96.4°F. His pulse was small and feeble, and his general state became so bad that I feared we should lose him.

Hot blankets, flannel shirts, and water bottles with hot portwine and milk enemas, and atropine and digitalin subcutaneously probably aided him to rally.



From a blood film, shewing two relapsing fever spirochaete of Case II. Average length of those examined 24'. Red blood cells, one polymorphonuclear, and one small mono nuclear leucocyte are also seen. Drawn to scale.

This improvement was followed the next day, 1st February 1910, by a slight toxic rebound fever, accompanied by a slight hemorrhage from the nostrils. After this he progressed well until his first relapse on 7th February 1910, which started with some vomiting and a rigor. A blood film shewed the spirochaete of relapsing fever.

On 8th and 9th February 1910—he again complained of feverishness without any additional trouble.

On 10th February 1910—at 11 A.M. his temperature started to fall, and at five P.M. he broke into a profuse

sweat and became more and more collapse. His condition was a replica of that described before, only if possible, he was now worse. All the previously used stimulants were again employed with the addition of strichnine and subcutaneous saline. He remained in the same condition all night.

On 11th February 1910—He was slightly better, but very weak. A toxic rebound fever set in, whilst the spirochaete disappeared from the blood film.

On 12th February 1910—Suddenly at 9.15 A.M. he became drowsy and lost consciousness. Low muttering delirium (toxic) supervened. No spirochaete were present in his cerebro spinal fluid, nor were they found in films from his peripheral circulation. His pulse and heart gave no rise at all to anxiety, responding as they did extremely well to treatment.

On 13th February 1910—at 10 A.M. he gradually rallied and slowly responded when spoken to. At 5 P.M. five small semi solid motions in two hours passed under him, and he became semi unconscious. Arms tremulous and sometimes with extensive movements for a few minutes. Slight muttering delirium with a tendency to leave his bed. Tongue dry with brownish fur.

On 14th February 1910—Drowsy but better.

On 15th February 1910—Good sleep last night, weak but much better. Several severe sweats.

On 16th February 1910—Pulse noted dicrotic.

On 18th February 1910—A few slight rigors all day. Some sweats.

On 19th February 1910—Slight rigors and sweats continue. Complains of nothing, save being 'feverish'. Two vomits. Spirochaete found.

On 20th February 1910—Few drops of blood from nose. One vomit. Spirochaete still present.

On 21st February 1910—No critical symptoms. Spirochaete not found.

On 23rd February 1910—Sudden profuse sweating for three hours with some collapse, and a weak pulse—which was, however, easily controlled with stimulants. From this date the patient's progress to recovery continued uninterrupted.

This case then forms a splendidly distinct clinical picture of a definite symptomless pyrexia with equally symptomless relapses, but accompanied at each crisis by a collapse so profound that one almost despaired of the patient's life, and followed in the case of each relapse by a rebound toxic fever during which the spirochaete were absent from the peripheral blood, and along with which were such other evidences of the severest possible toxæmia as hæmoptysis, repeated and continued sweatings, coma, tremors and low muttering delirium.

The spirochaetal infection did not seem heavier than in the first case, whilst both the total and the differential leucocyte count were normal.

It is interesting to note that no spirochaete were found in blood films taken during the toxic rebound fever, nor were they discovered in the cerebro-spinal fluid during the patient's comatose and insipid state.

At a time when the peripheral circulation abounded with organism films of the patients sweat and urine were obtained. No spirochaete, however, were ever noted in any of the preparations.

A comparison of the white cell counts of the two cases showed them to be practically the

same. The average counts of some twenty-five films being—

Detail	Case I	Case II
Total White Cells per c m m	5,000	4,375
Differential White Count		
Poly Cells	72%	66%
Large Mononuclears	10%	14%
Small Mononuclears	16%	18%
Transitional Cells	2%	2%
	100%	100%

Having thus briefly examined the clinical histories of the two patients, it now lies before us to go into the points suggesting a possible difference in the strain of the organism responsible for the infection. These points are four in number—

(1) Firstly, as to the difference in the place of origin of the two cases

(2) Secondly, as to the difference in the clinical symptomatology

(3) Thirdly, as to the difference in the morphological characteristics of the two casual organisms

(4) Fourthly, as to the agglutination reaction. We will now take up these points seriatim.

Firstly, then, as to the difference in the point of origin of the two cases—I was naturally put to some considerable pains to prove a channel of infection between these two men. This investigation, however, failed. The following are the bare details—

(a) Case I came straight from Jaipuri into the hospital without first visiting the lines (13th December 1909)

(b) Case II came straight from the Regimental Lines to hospital on 25th January 1910 roughly after a space of five times the usual and three times the maximum incubation period of relapsing fever, since the admission of Case I.

(c) No means of communication had apparently existed between Case I and Case II. Case I had not left the hospital at all, and Case II had not visited even the compound on any pretext whatsoever.

(d) All Case I's belongings, clothes, etc., had been kept isolated in hospital, and none of his property had been removed to the lines.

(e) No other contact cases had apparently occurred.

(f) Case II was a recruit, whilst Case I was a rifleman of four years' service, they apparently did not even know each other.

(g) Case II had not left Bangalore on leave, etc., even for one night for a year.

Not only then could no channel of infection between these cases be discovered or even suspected, but the evidence seemed to suggest that they were of independent origin. Case I certainly imported, and Case II of local Bangalore origin, and this in spite of the fact that no

other cases of relapsing fever had been diagnosed in and about this station.

Secondly, as to the difference in clinical symptomatology—On reading the notes of the cases through one is at once struck with a marked difference in the picture presented. Case I lay decidedly ill and jaundice tinged during each successive pyrexia (*i.e.*, during the period his blood was spirochaetae laden) at times groaning with his abdominal pain, and enlarging liver and spleen. But the moment his crisis appeared (and the spirochaetae disappeared from his blood), he was immediately quite well and remained so until his next relapse.

Case II, on the other hand, whilst he had his spirochaetal fever was practically quite well. He presented no abdominal or other physical signs and complained of nothing save a hot feverish feeling.

Directly, however, his spirochaetal agglutinins were sufficiently developed to cause a disappearance of the organisms from his blood and consequently his pyrexial crisis, he became gravely ill and developed on each occasion symptoms of the profoundest possible toxæmia.

Not only then were the cases as clinical types markedly different, but read in terms of the doctrine of immunity they seem to suggest that in the first case (who was ill with his fever and well the moment it left him) the cause of his trouble may have been an extra-cellular toxin continually produced by the living organisms infesting his body, and when these spirochaetae were destroyed at the crisis, the patient was at once relieved.

But in the second case (in which the patient was well with his fever and gravely ill when his temperature fell), it was the intra-cellular toxin set free by the death of the spirochaetae which, at his crisis, caused so severe a poisoning of his system.

There may have been other agencies at work for the production, the one case of a potent extra-cellular toxin, and in the other case of an equally potent intra-cellular toxin—but at least this may be said that the suggestion exists of two strains of the casual spirochaeta, the one producing for the most part an extra- and the other an intra-cellular poison—and in this difference is thus explained the difference in the clinical symptoms produced.

Thirdly, as to the difference in the morphological characteristics—I am well aware of the explanations and sound arguments which could be brought forward to explain the one great difference in the morphological characteristics of the two organisms which was noted, and I will therefore endeavour not to draw conclusions but will merely state the facts which were noticed in the many blood films examined at all stages of the pyrexia.

This one difference was this, a marked difference in the respective length of the organisms present in the two cases. It may be mentioned that one had to estimate these lengths by such a rough and ready means as a comparison with the diameter of a red blood cell. They therefore cannot be said to be strictly accurate, but the best possible was done under the circumstances, and probably the same marginal error exists throughout. Spirochæta partly cell covered or so curled as not to be estimable were of course neglected—otherwise the organisms were taken as they appeared.

In Case I—Fifty-two organisms were thus roughly measured, not one was observed over 21μ , they averaged 16μ , and fell into the following rough groups

Estimated length	Number seen
10μ	4
14μ	29
17μ	8
21μ	11
Average length	16μ

In Case II—Forty-one organisms were estimated, none were noted under 21μ , the average length of the series being 24μ .

They grouped themselves as follows

Estimated length	Number seen
21μ	23
25μ	6
28μ	9
35μ	3
Average length	24μ

These spirochætae in both cases were measured, as noted above, haphazard on any day of the fever. No support was found from the daily film work to Novy and Knapp's end to end agglutination forms produced by the patient's antibodies as the time of the crisis approached, but as a digression, whilst examining hanging drops of Case II's blood on 10th February 1910, I find the following note in my book "At 8 A.M., about two hours before the crisis started, swarms of organisms were seen. At 3-40 P.M.—about three hours after the crisis—organisms were very scarce, and these were of the longer variety."

As I have said above no attempt will be made to explain the marked difference in average length noted in the organisms of our two cases.

Fourthly as to the agglutination reaction—It was the failure of this reaction which made me first think seriously that the two cases might possibly be caused by two separate types of the relapsing fever spirochætae. On 8th February 1910, we had in our ward one case of relapsing fever with his blood full of spirochætae, and another case who had quite recovered and for twenty three days had no pyrexia at all.

Obviously if the spirochætae responsible for the two infections were of a similar type, the blood serum of the cured Case I should agglutinate the active organisms of Case II.

The following experiment was, therefore, planned. One drop of blood from Case II, containing active spirochætae was put up as a hanging drop preparation with one drop of antiserum from Case I.

As a control one drop of blood from Case II, containing the active spirochætae was put up as a similar preparation with one drop of normal serum from my own healthy blood. The motility of the organisms in the first hanging drop preparation was then to be continuously watched until it was noticed to cease, and immediately the activity of the organisms in the control preparation was to be observed. It was expected in the first hanging drop preparation that the antibodies which had brought about the cure of Case I, would more or less rapidly agglutinate the active spirochætae of Case II, and directly this had occurred, when the control hanging drop preparation was examined the spirochætae (not being in this case mixed with antiserum) would be found motile and would continue so for a certain definite period.

After several failures of the experiment from technical errors, six successes were recorded, all having the same result, of which the following (Experiment 5) performed on 20th February 1911, may be taken as a type.

8-30 A.M.—Blood specimens drawn off in Widals and kept at body temperature.

10-50 A.M.—Put up as hanging drop preparations as described above.

10-50 to 10-54—One active spirochæta seen 28μ long.

10-52 to 10-53—A second (21μ to 28μ) was seen in the same field.

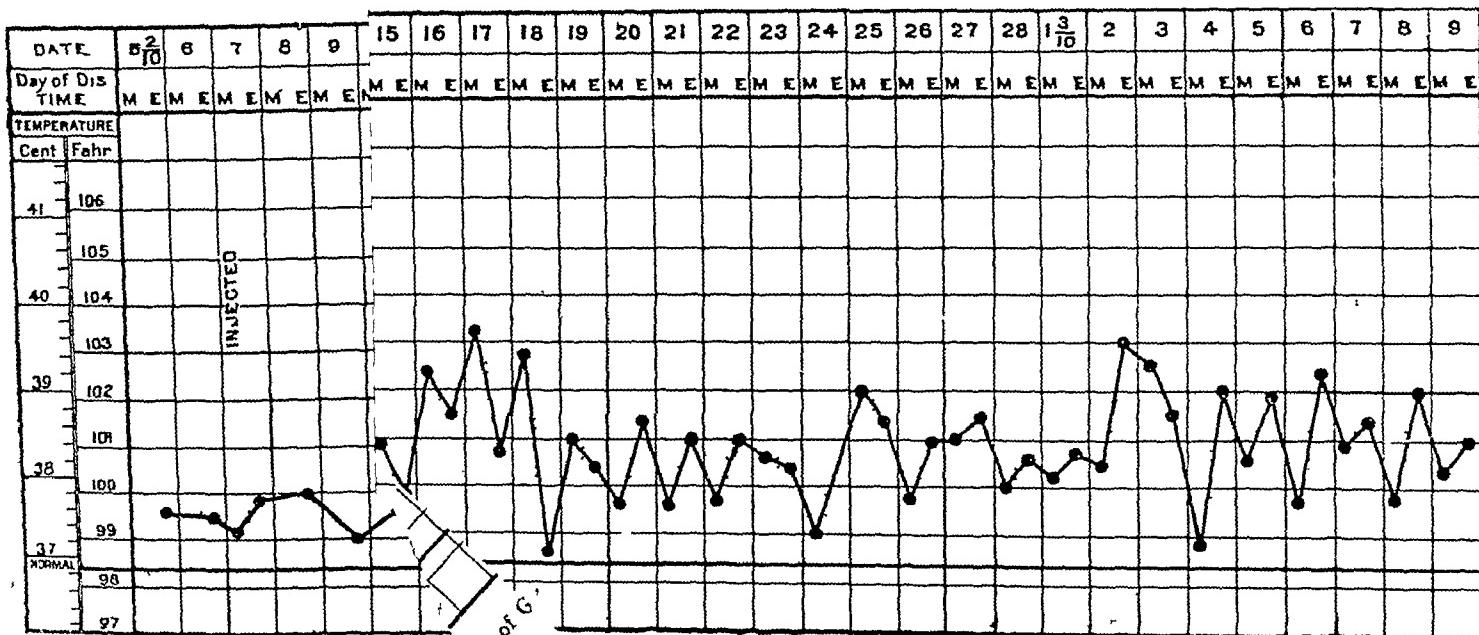
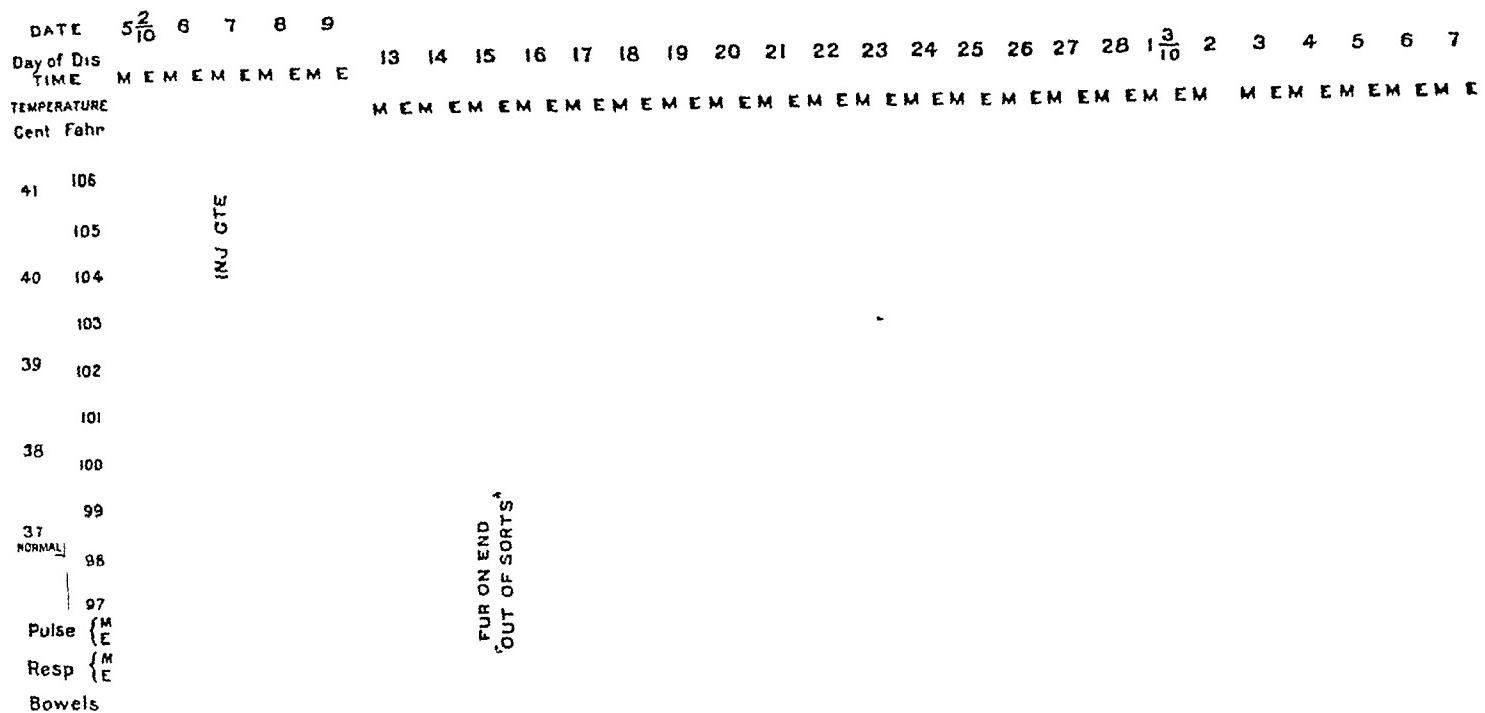
10-57—A third (21 to 28μ) was observed. For ten minutes his very active movements were followed across field after field of the microscope.

11-10—The spirochætae remained stationary in one field, but continued with lashing and wriggling movements throughout his whole length.

11-20—Periods of no movement alternating with the above described lashing and wriggling efforts.

11-25—Periods of repose increasing—(roughly 21 seconds repose, and 8 seconds movements).

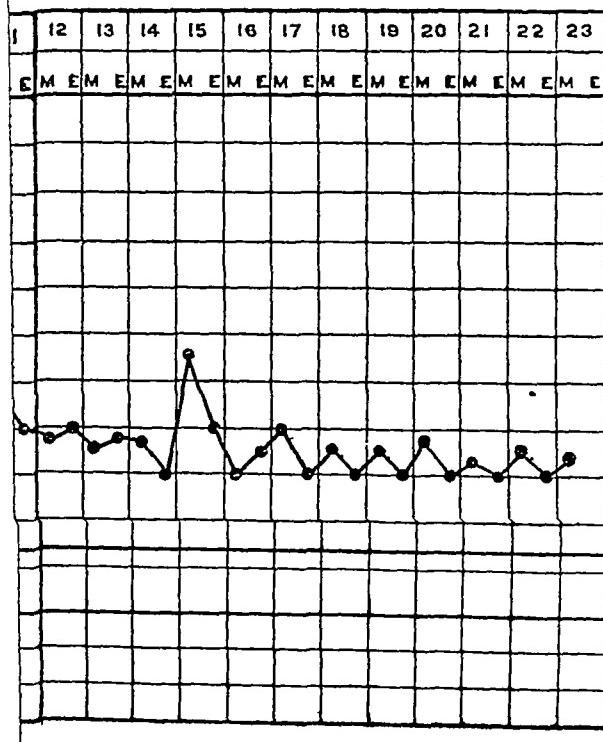
I. INFECTION EXISTING IN INDIA



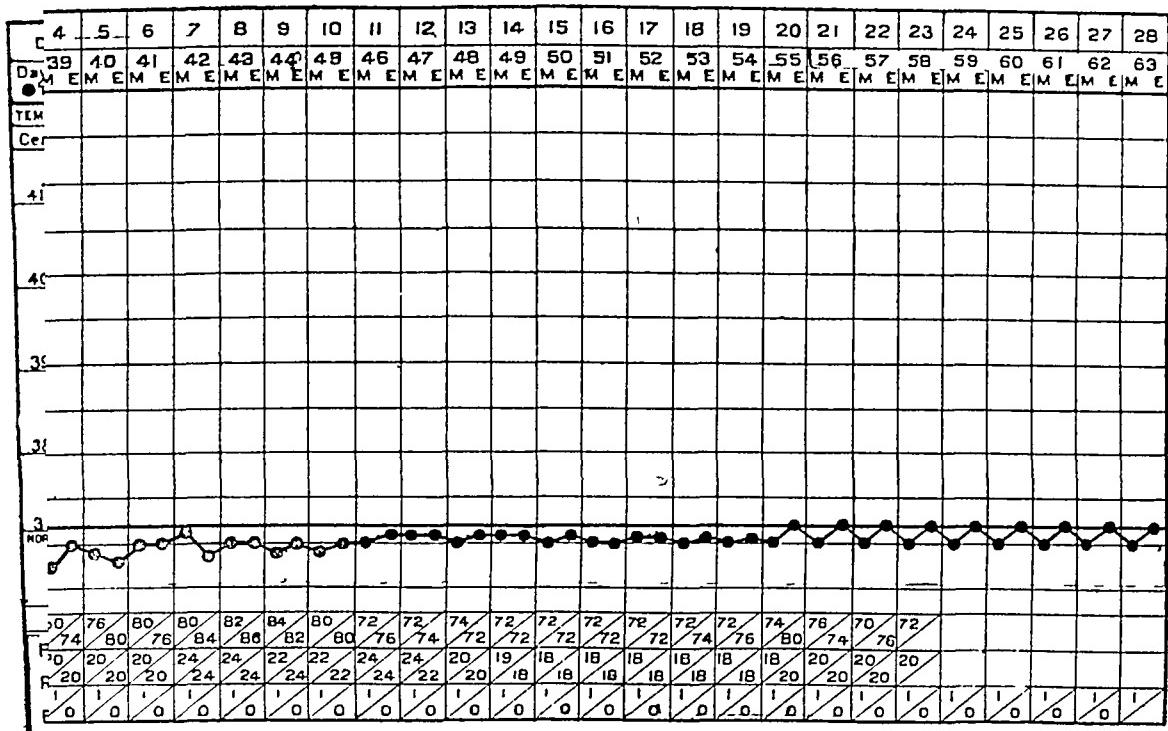
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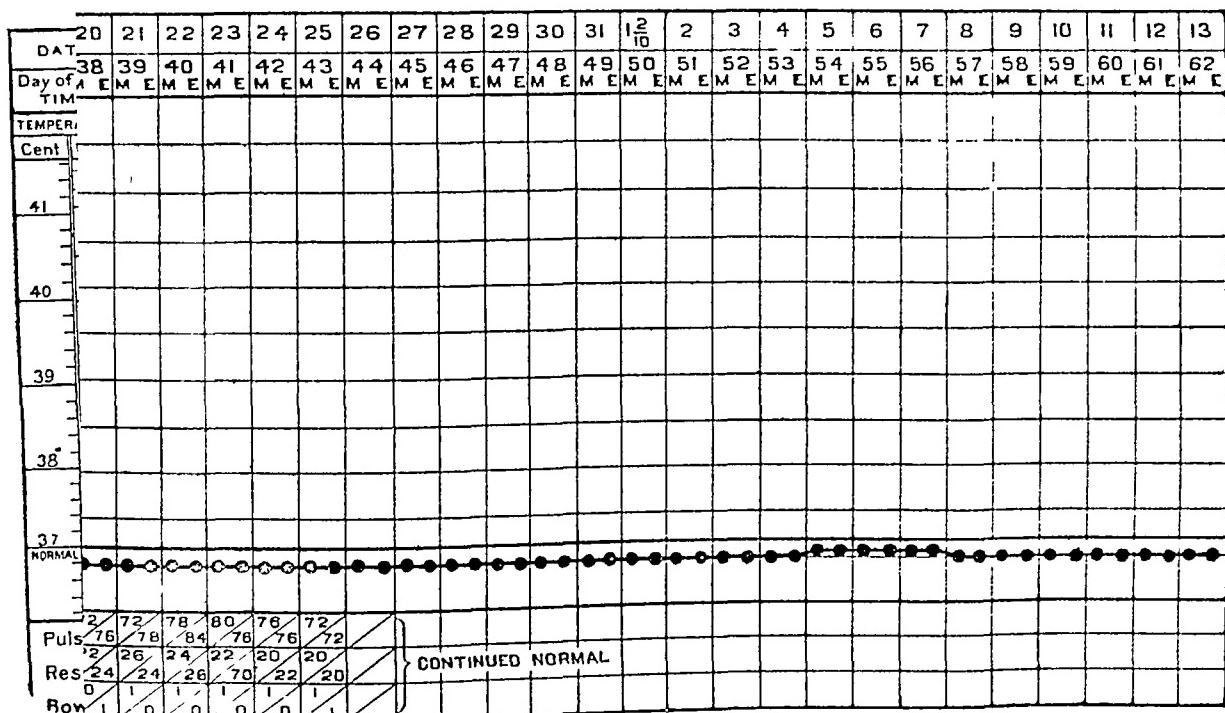
Ross's Article in Clifford Allbutt's System of Medicine



ROCHÆTAL INFECTION EXISTING IN INDIA



Temp. for a space of four days, during which period Spirochæte were absent from the peripheral circulation Recovery



pyrexia Recovery

11-30—Thirty-seven seconds repose, three seconds movements Quite motionless

10-35—Another organism seen with its anterior part making very feeble lashing movements

11-38—It stopped, the former spirochaetae was still seen motionless

11-42—Ten other organisms rapidly seen all dead None seen alive

11-44—The control hanging drop was examined No organisms were seen alive, several were seen quite motionless

This experiment then, and the five others with similar results, showed that the antiserum from Case I had no effect at all, as far as its agglutination power went, shorten the lives of the active organisms from Case II. In other words, these six experiments formed a basis for the suggestion that the casual organisms responsible for each infection were two distinct types of the relapsing fever group of spirochaetae, and hence that the possibility exists of a plurality in species of these organisms in India.

As to whether this is, or is not a fact must be left for more competent observers, with fuller opportunities for research than myself to decide.

Some Animal Experiments undertaken in connection with the above cases of Relapsing Fever

These experiments fall under two heads—

Firstly—With a view to the determination of the extent and degree of the pathogenicity of Case II's organisms to the lower animals, spirochaetal laden blood from the patient's veins being injected subcutaneously into (i) a monkey, (ii) a chicken, (iii) a white rabbit, (iv) a white rat, and (v) a guinea-pig. Controls (with the exception of the last named animal) being in each case kept.

Secondly—With a view to the detection of the transmitting agent of the relapsing fever spirochaetae, (i) bed bugs, (ii) mosquitoes, and (ii) lice were fed on a patient with the active organisms in his peripheral circulation, and these pests were then allowed to bite distinct and separate monkeys.

The experiments, although interesting, cannot be regarded as successful to any definite degree, for although periodic pyrexias were produced in both groups, yet never, either in the animal's blood films or in smears from their spleen and liver punctures were the relapsing fever spirochaetae ever recovered. I cannot explain why this was so. Certainly, if I ever had the good fortune to repeat the experiments, I should use hanging drop preparations in the place of stained smears, for one found in the human subject at least, that the actively motile spirochaetae were far easier to detect in such flesh preparations than in the dry stained state.

The temperatures recorded in each case are the rectal temperatures, taken with a constant eugth and the thermometer inside the anus.

The first group of experiments produced the following results

(i) Temperature Chart of Monkey A, which was injected with spirochaetal blood on 7th to 10th February 1910. His temperature rose on 11th January 1910 to 104° F., and at the same time he became sleepy and moody. He would not eat solids and took milk only. No rigoris noticed, no sweating. After a week's subnormal pyrexia, his temperature again rose to 101 4° F., but this time he was quite fit, and hereafter remained so throughout, although there was a third tendency to rise on 28th February 1910.

The control monkey maintained a perfectly normal temperature.

(ii) Black chicken B, was injected with a syringe full of spirochaetal blood on 7th February 1911, but his temperature never rose, remaining constantly normal at 105° F.

(iii) Temperature Chart of White Rabbit A, who was injected on 7th February 1911. On 15th February 1911 his temperature rose two degrees, and a week later to one degree more. But although on the occasion of his first rise in temperature he was obviously out of sorts, with his 'fur on end,' yet he rapidly recovered—and although he apparently had fever, yet he was apparently as well as his control feverless partner. No spirochaetae were ever discovered in his blood.

(iv) White rat A was injected on 7th February 1911, and on 16th February 1911 was 'off his feed' with pyrexia, which was followed seven days afterwards by a second slight pyrexial rise. He remained perfectly well, no spirochaetae were found in his blood. The control animal remained normal.

(v) The guinea-pig, kindly given me by my friend Captain Russell, I.M.S., was injected on 8th February 1911, and developed a pyrexia as shewn in the chart. He, however, never appeared ill and still lives, for aught I know, in the full enjoyment of life. No spirochaetae were ever seen in films from his blood.

The second group of experiments would have been most intensely interesting, if only we had been fortunate enough to recover the spirochaetae from the bug-bitten monkey's blood.

The pests (bugs, lice and female anophelineæ) were encaged in separate test tubes and starved for a few days. They were then inverted over our relapsing fever case's body (at a time, when he had spirochaetae in his peripheral circulation) and were watched bite him.

After a few days more they were in a like manner inverted over a shaved portion of the body of three separate and isolated monkeys, and it was again made certain they had bitten and had fed their fill.

In the case of the lice and mosquito-bitten monkeys, no pyrexia followed, but with the

bug-bitten monkey the result was different and justifies his experiment being recorded in full—

On 26th January 1910—Three bugs were caught and starved until 7th February 1910 when our patient lies in a relapse, and the bugs, thin and transparent, needed little inducement to gorge themselves.

On 8th February 1910—They were inverted in their test tube cage over monkey B, but refused to feed.

On 10th February 1910—They again refused to bite.

On 11th February 1910—We were more successful, and I know that the bugs had bitten the monkey for they attached themselves to its skin and refused to move, their own bodies became swollen, dark and shiny from the imbibed blood, and after they had finished the red marks on the monkey's skin plainly showed where the feast had been.

On 16th February 1910—The monkey developed a temperature of 102.6, and showed less inclination to active movements than of yore.

On 3rd March 1910—He was decidedly sleepy, and lay down all day refusing food, but otherwise he remained perfectly well.

Unfortunately, as mentioned before no spirochaetae were ever recovered from numerous films of his blood, nor from two spleen and one liver puncture, and so an important definite conclusion is denied us.

We may, however, say this, that the result of these animal experiments left us with these facts—

(a) That the monkey, white rabbit, white rat and guinea-pig developed a somewhat periodic type of pyrexia after direct inoculation with Case II's spirochaetal blood, whilst the temperature of the chicken and the control animals remained normal.

(b) That the fever induced was not a serious one, none of the animals being ever really ill, and no death being recorded.

(c) That whereas the monkey bitten by spirochaete-fed lice and mosquitoes developed no pyrexia, yet the monkey bitten by a spirochaete-fed bed bug did develop a temperature, and this temperature was moreover similar in type to that of the monkey inoculated with spirochaetal-laden blood by subcutaneous injection.

In conclusion, I must express my sincere thanks to my friends, Doctors A J H Russell, I M S, and J J H Nelson, I M S, for much valued help—and for their kind permission to work in the Bugade Laboratory, Bangalore, during the time it was under their successive charge.

THE PERSONAL FACTOR IN SANITATION

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[A lecture on Hygiene delivered at the Lahore Medical College on March 13th, 1911.]

In previous lectures the common Indian diseases malaria, plague, cholera, dysentery, enteric fever and tuberculosis have been dealt with from their public health aspect. It is now proposed to recapitulate the

most important prophylactic measures, more particularly from the point of view of the individual, which may be undertaken in order to prevent or mitigate the spread of these diseases.

(1) THE STATE AND THE INDIVIDUAL

Sanitary measures generally may be divided into two main classes—

(a) Measures which require the assistance and intervention of the State.

(b) Measures which may be carried out by the individual himself.

It is impossible, however, to divorce these two classes of measures entirely from one another, and it is obvious that no real progress in sanitary reform in India is possible without the co-operation of both the State and the people. But although the State can and should render considerable assistance it is of equal or even of greater importance that the individual should realise his responsibilities in the matter. The State cannot properly interfere with the inner domestic life of the people, and its function must be largely confined to promoting the physical well-being of the people by spreading knowledge in regard to sanitation and by rendering such assistance, financial and otherwise, as may enable the people to work out their own hygienic salvation. In these circumstances it may not be out of place to dwell on the value of the personal factor in sanitation, in doing so we are elaborating nothing original, but are merely emphasising a common place observation. At the present time this great truth is indeed attracting considerable attention, for example, the Indian Medical Record recently stated "there is no more pressing need for reform in India than the reform of our methods of living and the sanitation of the environments of the dwellings in which we live." And this, it will be conceded, is largely a matter for the individual. In the past sanitary reform in India has been looked upon to a great extent as the duty of Government and as a subject in which the individual possesses little or no responsibilities. Indeed judging from the resolutions frequently submitted in the Imperial Legislative Council this attitude rewards sanitation still has its exponents. It appears to be thought that by passing drastic laws and by the expenditure of large sums of money preventable diseases can be banished from the land. No greater mistake could possibly be made, for it must be clear that neither the issue of imperial *firman*s nor the pouring out of gold like water will be of any avail unless the co-operation of the people is also assured.

The Government of India have shown unmistakably that they realise their responsibilities in the matter and it now rests with Indians—especially educated Indians—to do their share in the work. And it is particularly the duty of members of the medical profession to disseminate knowledge in regard to the prevention of diseases amongst those with whom they come in contact. Here it may be stated not only it is essential that we should possess the necessary knowledge, but it is of the utmost importance that we should translate our knowledge into action, for it is unfortunately frequently observed that able and intelligent medical officers, men who could write brilliant essays, for example, on the prophylaxis of malaria, fail in actual practice to show the faith—or at any rate the knowledge—that is in them and omit to put into practice the knowledge they possess. In such cases knowledge is sterile and persons who act in this manner do not do justice either to themselves or to their training. Indeed, if sanitary reform is to become a reality in India, it is essential that those who possess the leaven of knowledge should utilize it fully so that it may in time permeate the whole. The task no doubt is stupendous and progress must be slow, but if those who should be the foci for the spread of knowledge fail to act as its "diffusion centres" progress will be well nigh impossible.

(2) THE IMPORTANCE OF SANITATION

It is unnecessary to dwell on the importance of sanitation in India except to emphasise the point that the greater facilities afforded by modern commercial and industrial enterprise, and especially by modern methods of travel, for the spread of disease tend to increase and complicate an already difficult problem. We have seen, for example, how the spread of plague and cholera in recent years, as compared with 50 years ago, has been modified and accelerated by modern methods of locomotion, and the complexity of the problems involved in the spread of disease was illustrated in the case of the Island of Mauritius, where endemic malaria was unknown until it became wide spread owing, it is thought, to the arrival from India of coolies containing the *plasmodia* of malaria in their blood and the importation by means of ships from Africa of an anopheline mosquito capable of acting as a carrier of the disease. It cannot be doubted that similar influences are at work in India, indeed instances have occurred in which areas formerly remote from the endemic centres of disease, have become infected as a direct result of the ease and rapidity of communication afforded by railways. The occasional diffusion of cholera from Hardwar to remote villages hundreds of miles away may be quoted as a case in point.

Further, the extension of industrial and agricultural enterprise, which is one of the most striking features in India at the present time, almost necessarily brings with it its own special dangers. For example, while it may be admitted that canal irrigation, if carried out in such a way that the level of the subsoil water is not unduly raised, does not necessarily increase the prevalence of malaria, nevertheless it is not possible to render fertile large tracts of land without at the same time providing the conditions favourable to the animal and insect pests which form the definitive or intermediate hosts of many human parasites. It may therefore be safely asserted that, provided no precautionary measures are adopted, a village built in an irrigated tract where previously a barren wilderness existed, will in a short space of time, become the habitat of rats, rat fleas, mosquitoes and of other parasites that prey upon man and beast. It must then be clear that not only is sanitary reform in India a formidable undertaking but that under the more complex conditions produced by modern industrial and commercial developments the task is, if anything, becoming daily more difficult. If the health of the people is not only to be improved, but is even to keep pace with their increasing prosperity, intelligent and systematic efforts on the part both of the State and the people are called for. We have already seen that the State alone is almost powerless in the matter, and it is this reason that has prompted me to devote a lecture to the importance of the personal factor in sanitation.

It is not sufficiently appreciated in these days of political activities, that India is probably much what it is on account of the neglect for many generations of sanitation, including in that term domestic cleanliness and personal hygiene. The effect of a healthy physique on the stamina of a people is undoubtedly great, and it is possible that the history of India might have been very different if it had not been for the microscopical protozoa which is the efficient cause of malaria. The domestic hygiene of a people affords a true indication of their civilization, no Indian can therefore do better work for his country than by seriously applying himself, in however a humble degree, to the task of promoting its sanitary regeneration. And this is no academic opinion but a serious truth worthy of deep consideration.

(3) GENERAL MEASURES APPLICABLE BY THE INDIVIDUAL

Before detailing the prophylactic measures which may be put into operation by the individual to mitigate the incidence of the preventable diseases mentioned at the commencement of this lecture, it will be convenient to

refer to those general measures which are applicable in the prevention of all diseases.

These measures may be summed up in the three words Cleanliness, Fresh air and Sunshine. It is unnecessary to dilate on the value of personal and domestic cleanliness in the spread of disease. Apart from the danger of direct infection from the sick to the healthy, which may be a factor of importance in houses where attention to cleanliness is absent, the accumulation of dirt, refuse and rubbish in human habitations and in their immediate vicinity affords the conditions favourable to the existence and multiplication of the germs of many diseases and of the animal and insect parasites by the agency of which they are frequently transferred to man. To mention one instance we saw that, as the result of the neglect of domestic cleanliness, the inhabitants of the model chawls of Bombay were in 1906 decimated by plague, in spite of the fact that they were living in buildings replete with the latest sanitary improvements.

Equally important, on account of their inimical effect on the germs of disease and on most human parasites, are fresh air and sunshine. Thus we saw in connexion with plague, cholera and tuberculosis, that the germs of these diseases are quickly destroyed by light and more especially by the direct rays of the sun. Again an abundant supply of fresh air is essential, especially in the case of children and young adults if the body is to be developed and maintained in a state of vigour. Its absence tends to render the body peculiarly susceptible to the invasion of the tubercle bacillus, and we saw how the curative property of fresh air has been practically applied in the sanatorium treatment of consumption.

Indeed, it is difficult to exaggerate the importance of sunlight and fresh air in the human economy, but it would not be easy to find a civilized community in which these considerations were more neglected than by all classes of society in India. To quote an example I recently observed at a certain railway station some quarters for railway employees in the process of construction. Each room was duly provided with a window, but I was astonished to see men at work "bricking up" the window frames. On inquiry I found that the windows were provided in the plans as a concession, it may be presumed, to European prejudices, but that in order to meet Indian requirements it was necessary to remove what was, to the Indian mind, an obvious defect!

The causative agents of disease require usually special methods to demonstrate their presence, but not so the animal and insect parasites which modern research has proved play an important rôle in the spread of many diseases. These latter indeed have a way of drawing unpleasant attention to themselves. This warning should not be neglected and the presence of such parasites as mosquitoes, fleas, flies, lice, bugs, etc., should be looked upon as a danger signal, and their detection should be immediately followed by appropriate measures for their eradication. The association of human parasites and sanitation is so close that we might coin an aphorism and say "Tell me of your insect pests and I will tell you the state of your domestic hygiene."

And here may be mentioned the importance of personal cleanliness and tidiness, be the dress in the European or in the Indian style, or be it even a mixture of the two, it should always be scrupulously clean and tidy. It is scarcely necessary to mention that doctors who do not pay attention to such matters cannot hope to command either the confidence or respect of their patients, and it is therefore important, apart from considerations of health, that those who intend to join the medical profession should observe the ordinary proprieties in these matters. In short, we may say that the spread of disease is largely a matter of chance, all of us frequently come in contact with pathogenetic microbes, if the soil be receptive—if the health of the individual be depressed—the germs are able to establish

themselves and disease and perhaps death results. On the other hand, if the vital power be vigorous, or if the animal and insect pests by which the germs are frequently conveyed to man be absent, then the local conditions are unsuitable and the disease fail to gain a footing.

PRACTICAL MEASURES

To give practical effect to these considerations the following rules should be observed —

(1) Occasional inspections of the house and its neighbourhood should be made and prompt measures should be taken for the removal of any rubbish garbage and refuse that may have accumulated.

(2) The occurrence in large numbers of animal or insect pests in human dwellings should be considered an indication of danger and prompt measures should be taken to remove or destroy them.

(3) The house should be emptied once or twice a year, and on one occasion at least the walls should be lime washed.

(4) Food should be protected from contamination, and food grains safeguarded from the depredations of rats.

(5) Windows should be provided in all inhabited rooms so that while privacy may be respected, the free admission of light and air may be at all times possible.

N.B. — Windows should not be boarded or bricked up.

(6) Fresh air being particularly important during sleep, windows should be left open at night, and whenever weather permits persons should sleep outside.

(7) The clothing and person should be kept scrupulously clean and tidy.

It is impossible to overrate the value of these recommendations, which are in most cases easy of application. They are, however, essentially personal measures, and it is obvious that neither legislation nor subsidies from Government can afford much assistance.

(4) ANTI MALARIAL MEASURES

Recognising malaria to be a disease due to minute blood parasites called plasmodia — whose intermediate host is man and the definitive host is the mosquito, preventive measures may either be directed to destroying the parasite whilst in its human host or to the extirpation of its definitive host.

While it is inexpedient to differentiate between these two methods which should both be in operation wherever measures on a large scale are called for, it will be convenient to describe them separately. The first may be defined as quinine prophylaxis and the second as anti mosquito operations.

In regard to quinine prophylaxis it must be remembered that malaria is an infectious disease and that an untreated case of "fever" in the presence of certain species of anopheline mosquitoes is a source of danger to others. The first essential is therefore that every acute case of malaria should be properly and thoroughly treated. In view, however, of the fact that quinine does not exert much influence on the sexual forms of the parasite (which alone multiply in the stomach of the mosquito), it is also essential that measures should be taken to prevent the access of mosquitoes to persons in whose blood the parasites are circulating. The treatment advised was the exhibition in an acid mixture of ten grains of quinine sulphate three times a day as long as the fever continues followed by ten grains twice a day for two weeks more, and concluded with ten grains twice a week on consecutive days for a period of two months — or up to the end of the malarial season, which latter may be considered to last in the Punjab from about the 1st of August to the middle of November. The next point in quinine prophylaxis is that during the above indicated malarial season prophylactic doses of the drug should be taken systematically. This may be done either by taking a five grain tabloid or tablet of quinine each evening or by taking ten grains

in acid mixture on two consecutive days each week during the fever season. The former is probably the more convenient method for the individual, whilst the latter is applicable in the case of large bodies of men such as soldiers and the police. It would, however, appear from the fact that quinine is quickly eliminated from the system that a small dose of 4—5 grains taken each evening during the malarial season is the more efficient method, and it is the one therefore recommended for your adoption.

These again are measures essentially for the individual to carry out and, as regards the civil population, the State can do little beyond placing quinine within the reach of all who desire to avail themselves of it, and spreading knowledge in regard to the value of this excellent method of malarial prophylaxis. In regard to the extirpation of mosquitoes, you will probably be of opinion that here at least the responsibility rests with the provincial or local authorities. Large schemes of drainage, it is true, necessitate combined action, but I propose to show that even here a great deal can also be done by the individual.

Although our knowledge is not yet complete, we now know sufficient about the habits of malaria carrying mosquitoes to guide us in the task of conducting anti mosquito operations. We know, for instance, that in addition to marshy ground one of the favourite breeding places of anophelines are the small collections of stagnant water which are apt to collect in the neighbourhood of dwellings. We have seen, too, that village tanks are less often a source of danger, and that in regard to wells, while those in constant use do not ordinarily breed mosquitoes, disused wells are favourite breeding grounds. It must further be recollected that, although adult mosquitoes may travel half a mile or more, it is probable that if adequate food supply and shelter be available locally, they will not move far from the water in which they have been bred. We know also that dark rooms are particularly attractive to mosquitoes, if therefore houses be kept clean and bright, and especially if the walls be lime washed the mosquitoes bred in the neighbourhood will avoid to a large extent such ungenial surroundings. Each person can therefore, do a great deal to control the prevalence of mosquitoes in his own particular dwelling and its neighbourhood, and the measures that may be carried out for this purpose may be summarised as follows —

(1) Ignoring surface water which may be expected to dry up spontaneously within a week, all other collections of stagnant water should be removed and the hollows filled up.

(2) If this be not feasible, as in the case of small tanks in gardens, the surface of the water should be "oiled" once a week. This may be done by pouring on to the water a small quantity of kerosene oil and swishing the surface of the water with a stick until a thin film of oil has formed on the surface.

(3) If disused wells exist on the premises they should be covered up with some mosquito proof material, or if they are permanently disused they should either be covered up with some solid material or filled up altogether.

(4) Houses should be kept as clean and light as possible and thus rendered unattractive to mosquitoes.

Attention to these details will tend to reduce locally the prevalence of all varieties of mosquitoes, and there cannot be much doubt that if every householder, by an occasional inspection of his premises, followed the above directions a great local reduction would also occur in the number of malaria bearing anophelines and consequently in the amount of "fever". But in order to eliminate all chance of infection the use of mosquito nets during the "fever season" is also necessary. It has been proved that people may live with impunity in even the most malarious places in the world provided they take proper precautions to guard themselves from the bites of mosquitoes. The careful and intelligent use of the net is, however,

essential. It should not have the slightest tear, it should be hung inside the poles and not outside them, it should be tucked under the mattress all round, and it should never be allowed to hang down on the floor. The bed should be broad so that no part of the body can come into contact with the side of the net during sleep.

Finally, houses should be made as mosquito proof as possible. This may be done by protecting windows with wire gauze and providing doors with automatic closing arrangements. All curtains and hangings, etc., which form shelters for mosquitoes, should, so far as possible, be removed and rooms may with advantage be occasionally fumigated by burning sulphur in them for three hours after previously pasting up with paper all chinks in the doors and windows. It may not be possible to carry out all these recommendations, but three at least you will be able to adopt (1) quinine prophylaxis in the malaria season, (2) the use of mosquito nets, (3) the removal or destruction of local breeding places of anopheline mosquitoes.

(5) ANTI PLAGUE MEASURES

It has been shown that bubonic plague is a disease in which infection is contracted in the vast majority of cases from the rat through the agency of the rat flea. Bubonic plague is therefore not a contagious disease in the ordinary sense of the term, and this fact requires to be taken into account in framing our personal prophylactic measures. Obviously the first thing to do is to eliminate or reduce the rat infestation of our houses. In this connexion the measures already indicated, by means of which the food supply and shelter afforded to these rodents will be curtailed, are of the utmost importance. If the rats do not find a congenial environment they will soon migrate elsewhere, so that domestic cleanliness and protection of the food supply will automatically bring about a permanent reduction in the local rat prevalence. This state of affairs may be accelerated and rendered more complete by destroying rats by means of poison, traps, or by keeping cats. It is obvious, however, that these latter measures are likely to prove far more effective if at the same time the measures already indicated are taken to render the house less attractive to rats.

The reduction of rat prevalence will reduce, *pari passu*, the chance of infection even if plague be imported.

If, however, this should occur in the case of an uninfected village, the spread of the disease may be prevented if timely precautions be taken to prevent the rat population from becoming infected. With this object the clothing, personal effects and baggage of the infected individual should be thoroughly disinfected by a disinfectant having pulicidal in addition to germicidal properties. The house too should be similarly treated with the object of destroying all infected fleas, and thus preventing infection reaching the local rat population.

To achieve the former object all clothing and personal effects may be soaked for 30 minutes in phenyle or in cyllin, or in some other suitable disinfectant having pulicidal properties. In circumstances where this procedure cannot be carried out such articles may with advantage be exposed to the direct rays of the sun for a few hours.

It has indeed been recently shown* by Captain J. Cunningham, I.M.S., that the sun is an extremely efficient disinfectant for flea infected clothing. His experiments indicate that all fleas contained in clothing, resins, etc., if the latter be spread out in the sun on a sandy surface, are killed after 45 minutes' exposure.

provided a temperature of 120°F° is maintained. This is an important observation, for the need of a cheap and efficient anti plague disinfectant capable of universal application has long been felt.

For the disinfection of rooms either heat, applied by means of some such contrivance as the Jullundur stove, or chemical disinfection carried out by thoroughly washing the floors, walls, and roof of the room with a pulicidal substance such as kerosene oil emulsion, posterine or one of those already mentioned may be adopted.

In all cases it is desirable that means should also be taken to provide for the free admission of light and air into the rooms of the house. Further, as plague is frequently conveyed from place to place by means of infected fleas carried in the clothing of persons who themselves escape infection, it is desirable that the above precautions should also be carried out whenever persons coming from infected areas enter uninfected villages. If, however, there should be evidence of widespread infection of the rats in the village, of which rat mortality will usually give timely warning, disinfection can no longer to be relied on. The house should be at once evacuated and its inhabitants should undergo anti plague inoculation. Evacuation consists in leaving the house (especially at night) and in occupying temporary huts, tents or other shelters erected in the open at a distance of at least 200 yards from infected dwellings. It is wise previous to moving into camp to disinfect or place in the sun for one hour all articles taken from the infected house. The efficient disinfection of mud built houses is a matter of extreme difficulty, and if evacuation be adopted it will frequently be unnecessary. It is, however, of more value if thoroughly carried out by trained persons, in the case of brick built houses, and here disinfection, followed by occlusion of all rat holes and the free admission of light and air may be followed by immediate reoccupation, especially in the case of those who have recently been inoculated.

To sum up the chief anti plague measures applicable to the individual are —

(1) Reduction of rat infestation by (a) domestic cleanliness, (b) rat destruction.

(2) In the case of an isolated imported case of plague prompt measures to destroy rat fleas and thus prevent infection spreading to the local rat population.

(3) To prevent the importation of the disease the disinfection by the sun or otherwise of the clothing and baggage of all persons coming from infected areas.

(4) In the case of a widespread epidemic (a) anti plague inoculation, (b) evacuation.

(6) MEASURES FOR COMBATING CERTAIN WATER AND FOOD-BORNE DISEASES

Cholera, dysentery, enteric fever and tuberculosis being diseases in which the specific germ is introduced into the human body chiefly through the alimentary tract — for even in pulmonary tuberculosis there is reason to believe that inhalation only plays a minor part — it will avoid repetition to discuss the preventive measures of a personal nature which should be adopted in connexion with these diseases under one heading. In the case of the first three we have to recognise the following facts —

(1) The specific organism of the disease is excreted from the body in the evacuations.

(2) The microbes thus eliminated under favourable conditions may retain a saprophytic existence outside the body for a considerable period, in some cases many months.

(3) For infection to occur it is necessary for these microbes to gain entrance to the alimentary tract of the human body.

In the case of pulmonary tuberculosis the tubercle bacillus leaves the body in the sputum, but in other

* Scientific Memoirs of Officers of the Government of India, in the Medical and Sanitary Departments, No. 40, January 1911.

respects the spread of this disease presents many points in common with that of the others.

From a consideration of these facts it is clear that one of the most important measures for preventing the spread of these diseases is connected with the proper disposal of the excreta including in this term, in reference to tuberculosis, the sputum,—so that our food, water or milk cannot become contaminated by patho genetic germs.

An efficient system of sewage disposal does not, however, come within the scope of the individual, and in this connexion it may be said that in the absence of a water carriage system the daily removal of human excreta in tins with closely fitting lids is probably the most satisfactory method that can be devised. But where the personal factor does come in—and on this point I wish to lay the greatest possible stress—is in connexion with the common practice as a result of which "nuisances" are committed in the immediate neighbourhood of human dwellings. If, as must not uncommonly happen, persons, who are incubating or in the early stages of cholera, enteric fever, dysentery and certain forms of enteritis, commit "nuisances" in open places, their excreta will frequently be infective, and the first stage in the spread of these diseases will have thus been accomplished.

Take the case of enteric fever for example. It is known that in certain mild forms of the disease in which the patient is never ill enough to go to bed the excreta contain the bacillus typhosus, again the bacilli may be excreted during the incubation period of the disease, and finally it is now known that a comparatively large percentage of persons remain for some months after recovery "intestinal carriers" of the disease. To consider the subsequent course of events in detail, we may say that in the rainy season the germs may be washed into neighbouring wells or other sources of drinking water and thus gain entrance into the human body, or in the dry season the excreta becoming desiccated—the germs may be blown about in the form of a fine dust, which, should it settle on articles prepared for human consumption, may be the means of introducing the pathogenic microbes into the intestinal tract. Again, it has been shown both that the household fly (*musca domestica*) shows a selective affinity for human excretion, and that it may be a mechanical transmitter of these diseases.

For these reasons the commission of "nuisances" in unauthorised places must be looked upon as a grave source of danger to a community in which these diseases are or may be prevalent. It is in fact no uncommon thing to see dysenteric stools in the neighbourhood of human habitations. Indeed, few Europeans realise the extent to which the practice under reference is constantly going on in their midst; and it is by no means an exaggeration to say that the surroundings of many bungalows and even parts of public gardens are frequently made objectionable as well as dangerous in this manner. It is therefore impossible to condemn in too strong terms these objectionable practices, which should be looked upon as a relic of barbarous times.

If nuisances should be committed danger may be averted if the excrement be buried or at least covered with earth.

It will not, however, be possible to do away altogether with this evil in large towns and cities unless adequate provision is made for public conveniences. In the case of civil stations particularly it is necessary that public latrines should be erected in proximity to main thoroughfares and in suitable places in public gardens and other places. In civil stations the servants in the employment of Europeans are the chief offenders, and it is therefore essential that every bungalow should be provided with a servants' latrine. When these measures have been carried out it should be possible not only to enforce the provisions of the Municipal Act, but also to make strict by laws on the subject for civil stations

and other places where public opinion sanctions such regulations.

Mutatis mutandis, the same principles apply in regard to spitting. Expectoration on the floors especially in public places such as railway stations, railway carriages, etc., should be considered "disgraceful conduct". In the case of those known to be suffering from pulmonary tuberculosis the sputum should either be received into a vessel containing a disinfectant or be deposited in a paper handkerchief or other article which can subsequently be burnt.

The part played by flies in the spread of disease has already been mentioned. The house fly, or as it has been called the "typhoid" or "septic" fly, breeds in filth of all sorts, and we may therefore say that the presence of flies means dirt and dirt means, as we have seen, disease. These insects should therefore be looked upon as "indicators" of the sanitary condition of houses, and it should form part of the personal measures of sanitation carried out by every householder to see that flies are not allowed to breed with impunity in the neighbourhood of his dwelling.

The above form the true preventive measures for dealing with cholera, enteric fever, dysentery as well as other diseases due to intestinal parasites, and there can be little doubt that their general adoption would owe considerably the mortality from these diseases in India.

I do not propose to deal fully with the other personal prophylactic measures which may be adopted. They resolve themselves, speaking generally, into rendering our food and drink innocuous by various means. In the case of cholera the water should invariably be boiled. The disinfection of wells by means of potassium permanganate cannot be relied on, for except in very strong solutions, the oxidizing power of this substance is not sufficient to destroy with certainty the cholera vibrio.

Milk also should be boiled, for in addition to the danger of contamination by dust, flies, dirty vessels, etc., milk from tuberculous cows is a common source of infection with the tubercle bacillus, especially in the case of children. It is, however, well to remember that the keeping properties of milk are modified by boiling, so that it is desirable to use it as soon as possible after boiling. Similarly while uncooked vegetables, raw fruits, salads, and other uncooked articles of food should at all times be viewed with suspicion, they should be altogether avoided whenever cholera, dysentery, enteric fever or diarrhoea are prevalent.

Finally, it may be mentioned that in the case of enteric fever the great value of anti typhoid inoculation has now been placed beyond the region of doubt.

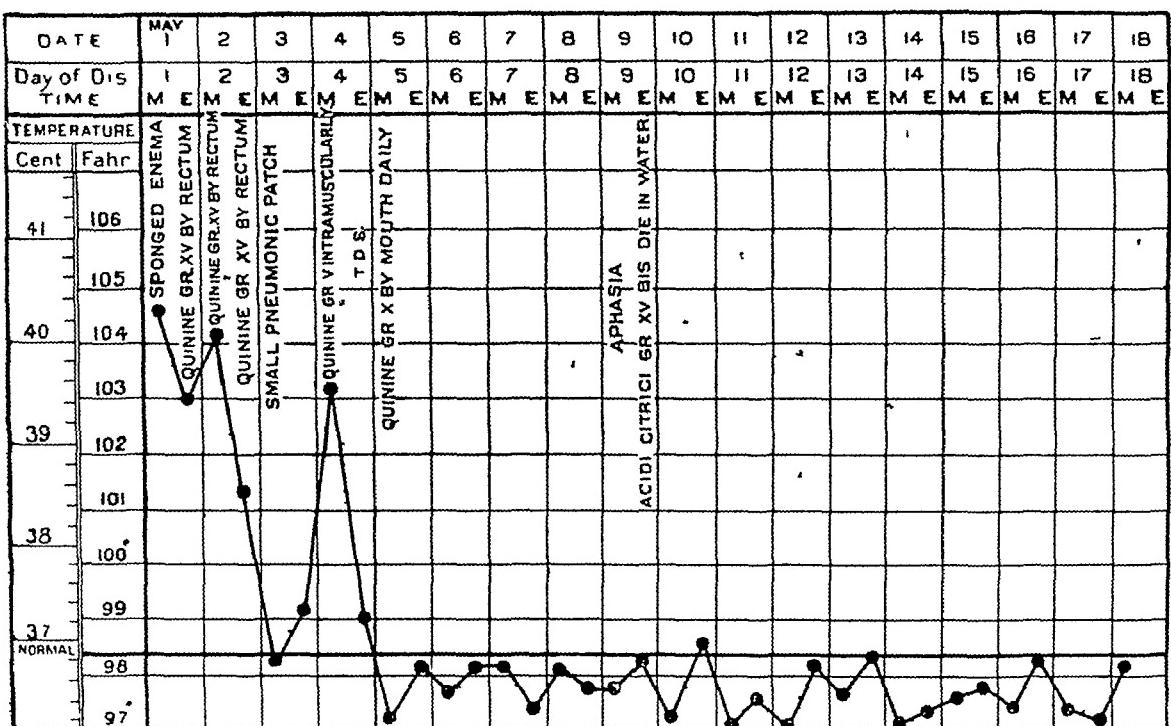
Conclusion.—The suggestions made may seem to demand the expenditure of a great deal of time and trouble, but it is not so. To start with, it should not be difficult to avoid the sins of commission which have been alluded to, and in regard to the other measures it will be surprising what can be done by an inspection once a week, lasting half an hour, of the house and premises. The lighting, ventilation and general cleanliness of the house will quickly be revealed whilst outside the sanitary arrangements, the breeding places of mosquitoes and flies will as quickly be inspected, and at the same time other accidents or deficiencies such as a blocked drain, collections of refuse or new rat holes will be brought to light.

Periodical inspection if followed as it should be by periodical action will in a short space of time vastly improve the sanitary condition of the home, action will soon be decreasingly necessary and the dwelling will eventually become like an oasis in the desert—a spot where man may develop mentally and physically unchecked by the "unseen, small, but million muidering curse" of disease.

SOME UNUSUAL CASES

BY CAPT R KNOWLES, I.M.S.,

Acting Civil Surgeon, Jhansi



A Mirror of Hospital Practice

SOME UNUSUAL CASES

By R KNOWLES,

CAPTAIN, I.M.S.,

Acting Civil Surgeon, Jhansi

I.—MALARIAL COMA WITH SUBSEQUENT APHASIA

SUNDER, Hindoo female 25 years of age was brought to hospital lying unconscious on a charpoy on date 1st May 1911. The patient was completely comatose, axillary temperature 104.6° with both knee jerks absent and flaccidity of limbs. Spleen palpable and extending about an inch below the costal margin.

Treatment—Sponged. A 3-pint enema of soap and water was given, and half an hour later a rectal injection of 15 grains of quinine sulphate in acid solution in a pint of water. Most of this quinine injection was retained. Sponging was continued, and on the 2nd May a second enema, and morning and evening rectal injection of quinine given as above. The temperature sank to 101.4° on the evening of the 2nd, and 98.2° on the morning of the 3rd. Consciousness was recovered; the patient answered questions, and could speak normally. As the pulse was of very weak tension four-hourly hypodermic injections of Liquor styrchnine hydrochloride in $\frac{1}{v}$ were given—three injections.

On the 3rd May a patch of dulness with crepitations was discovered at the base of the right lung in the axilla. A sinapism was applied, quinine and enema discontinued and a diaphoretic mixture (Bx Acidi citrici, gr $\frac{1}{2}$, Ammon carbonatis, gr $\frac{1}{2}$, Tinct digitalis, m $\frac{1}{2}$, Tinct scillæ, m $\frac{1}{2}$, Laq ammon acetatis, 3iss, Aquam ad $\frac{1}{2}$ l four-hourly)—was given. Three days later the signs in the lung had cleared up.

On the 4th May the temperature rose in the morning to 103.2° , and quinine bihydrochloride, gr $\frac{1}{2}$ intramuscularly was given three times during the day. The urine drawn off by catheter, contained traces of albumin but no sugar. A lumbar puncture was performed, as there was slight rigidity of the muscles at the back of the neck, but the prepared films shewed no bacteria or leucocytes. Blood films taken the same day were examined with a negative result,—probably because of the quinine administered a few hours before.

On the morning of the 5th May the temperature was 97.2° . Patient was now put on to quinine by the mouth, and has continued to take it since. There has been no more fever.

On the morning of the 9th May it was discovered that she could not speak at all. The temperature was 97.8° . Laryngoscopic examination shewed both vocal cords in a position of

complete relaxation,—patient being wholly unable to approximate them. The luma glottidis also seemed more patent than normal and relaxed. There was no appearance of inflammation locally. The larynx could be handled without apparent pain, and when asked, if there was any pain, the patient shook her head.

Stips of sinapism were placed down the front of the laryngeal and tracheal area of the neck every 48 hours. With the possibility in view of the cause being some local cerebral thrombosis, she was given twice daily —Bx Acidi citrici, gr $\frac{1}{2}$, in a tumblerful of cold water. This, with 10 grains of quinine daily, have been continued to date.

Speech returned on the 23rd May,—but of a totally different character to her prior speech. She now speaks slowly, with tremendous effort, in a deep, gruff, hoarse voice,—quite unlike her original voice, the words, however, being quite intelligible. The vocal cords have returned to their normal position and can be approximated. Mentally, she is quite intelligent.

The knee jerks have been absent throughout, but there is no ankle clonus, no extensor plantar reflex, no discernible local paralysis or paresis. She can walk unaided, but is weak. The diagnosis of malaria is, of course, uncertain, but the fever was tertian remittent.

Later note, 27th May 1911.—The patient now speaks without much effort and the voice is returning to its normal quality.

II.—LARGE GANGRENOUS LIPOMA OF THE NECK

Thakur Das, 52 years of age, Brahmin, was admitted to hospital on the evening of the 25th March, 1911, in a critical state of high fever, weak pulse and overwhelming toxæmia. Growing from the nape of the neck was an enormous tumour about the size of the full-term foetal head at birth with the crown of it, a circular area some $4\frac{1}{2}$ inches in diameter covered with black, necrotic sloughs. He said that it had been growing for some 18 months. Operation was performed on the 26th March, in the hope that the tumour might not be sarcomatous. The lozenge-shaped incision extended from the middle of the posterior border of the right sternomastoid to a point an inch below the left auditory meatus and from the occipital protuberance to over the spine of the second dorsal vertebra. To one's surprise the tumour, which proved to be a lipoma and purely subcutaneous, shelled out readily with very little bleeding. The lateral ends of the incision were sutured, leaving a large lozenge-shaped area in which the muscles of the nape of the neck were hardly covered by any subcutaneous fat.

This area subsequently granulated well, leaving a circular uncovered area about 3 inches

in diameter unprotected On skin-grafting being suggested, the patient, with that delightful *inconsequence characteristic of some natives*, absconded, and has not since been seen The area in question will probably become keloid in character The tumour weighs 2 lbs 12 oz The patient never touched alcohol in his life Would any museum care for the specimen as the writer cannot carry it about India on his customary four or five months a year?

III—GANGRENE OF THE EPIDIDYMIS FROM GONORRHOEA

Mr T N M, Brahmin, 55 years of age, called me in to see him on the 15th April 1911 He gave a history of an acute attack of gonorrhœa during the preceding ten days There was still some purulent discharge from the meatus and very acute epididymitis on the right side

He was treated by "Nizin" injections (B W and Co) and the scrotum was kept surrounded by an icebag, refilled every 2 hours day and night A stimulant, diuretic mixture was given On the fourth day the patient seemed to be recovering

On the 6th day there was again high fever and acute pain and tenderness over the right inguinal canal The right leg was kept flexed, the pulse was rapid and bounding and, but for the earlier symptoms, one might have suspected appendicitis The ice was now transferred to the right inguinal and iliac regions The next day patient seemed again better The urethral discharge had now ceased

On the eighth day, April 22nd I found him again in a state of high fever with acute pain in the scrotum and inguinal canal, and in a critical condition There was fluctuation in the right side of the scrotum

He was conveyed to hospital and at once operated upon An antero-posterior incision from below was made into the cavity of the right tunica vaginalis and thick pus at once came out A second incision was, therefore, made in the upper part of the scrotum and the right testis and cord delivered

The whole of the right epididymis was found to have sloughed into mere shreds of tissue The testis, on the other hand, was hardly affected,—merely red and a little swollen The right spermatic cord was thicker than one's thumb, infiltrated with pus and inflamed It was freed up to the internal abdominal ring, transfixed and tied, and the portion distal to the internal ring with epididymis and testis removed, as there was some risk of peritoneal infection

Convalescence was uninterrupted and the patient is now well, four injections each of 50 million gonococci and 3 each of 250 million staphylococci were given during convalescence There has been no further sign of the disease

Films of the pus shewed abundant cocci—both intra-cellular and extra-cellular As Carbol Gentian Violet made with hospital carbolic acid never keeps long without precipitating, I was unable to apply Giam's differential staining I am almost certain that the injection was a mixed one

Acute funiculitis is common enough in gonorrhœa, and on the right side may simulate appendicitis, but one has not known the whole epididymis in any previous case to have reached the stage of gangrene

IV—TRAUMATIC SUPRA-ORBITAL NEURITIS

Inam-ud-Din, Mussalman, aged 30 years, presented himself at out-patients' on the 17th April 1911, complaining of tenderness and slight swelling above the left eyebrow, and neuralgic pain over the left frontal and parietal regions He stated that, when praying, he always brought the left side of the forehead, rather than the right side, into contact with the ground, and he believed this to be the cause of his symptoms

Under cocaine anaesthesia, a short vertical incision was made about the left supra-orbital notch, and the supra-orbital nerve exposed It was picked up in the forceps, and at once a piece about $1\frac{3}{4}$ inches long, bifurcated at its distal end, came away Two stitches closed the incision

The patient returned on the sixth and tenth days, and stated that he had had no more neuralgic pains The piece of nerve removed is a little thicker than an ordinary clinical thermometer

V—CELLULITIS OF THE SCROTUM OF DOUBTFUL CAUSATION

Constable Shanker Dyal, aged 30 years, Hindoo, was admitted to the Police Hospital, Jhansi, on the afternoon of 22nd April 1911, having been carried in from Babina by *doolie* He was in a comatose, unconscious state temperature 106°F , pulse not palpable at the wrist, no details concerning the onset of illness could be ascertained

He was stripped and sponged A large, hard bubo was found in the right groin, and a smaller hard one in the left groin These were painful, the patient moaning when they were handled

The scrotum was enlarged by acute subcutaneous inflammation in its dependent part to the size of a cocoanut It was painted over with Tincture of iodine and freely incised in several places Clear serous fluid and blood were squeezed out easily from all parts, but there was neither pitting, oedema, nor inflammation in the perineum A No 14 catheter was easily passed into the bladder without obstruction, and drew off a large quantity of clear yellow urine, free from blood, but containing a fair amount of albumin There was no bleeding at the meatus The cause of the cellulitis therefore could hardly have been extravasation of urine

From the right bubo a large, hard lymphatic gland,—the size of a walnut,—was excised, cut across, and films prepared from it. These were found to be crammed with small, short, granular staining bacilli but no cocci.

No venereal sore was to be detected, and no mark of injury to the scrotum. The patient died some 4 hours after operation. Permission for a *post-mortem* was refused.

Plague was suspected as the cause of death but there was then no plague in this district. I believe that the serous fluid expressed from the tissues must have been hydrocele fluid, but if so the hydrocele must have emptied itself into the tissues as there were no signs of hydrocele. I went down to Babina to inoculate his fellow policemen of 18 three were inoculated with fear and trembling—although they readily produced a dozen “willing” villagers. The brother of the deceased refused inoculation at any cost, on the ground that “one death in the family from plague was quite enough.”

VI—FATAL COMPOUND FRACTURE OF THE STERNUM FROM INJURY BY A WILD BOAR

Gungoo, 30 years old, Hindoo male was brought to hospital sitting up in a bullock cart, leaning forward and breathing with great difficulty on the 1st May 1911, with the history that whilst he was cutting wood, seated behind a tree, a boar had rushed at him and struck him in the chest.

An oval 1 inch wound—probably entrance wound of the tusk—was found over the right margin of the sternum below the articulation with the third costal cartilage and a diagonally upward transverse, jagged wound crossed the sternum from the articulation with the third right cartilage to that with the second left cartilage.

The wounds were explored under chloroform anaesthesia. The sternum was found to be smashed transversely across from one articulation with the third costal cartilage to the other there was $\frac{3}{4}$ of an inch separation between the parts of the sternum and several small bits of broken bone were removed from the interval. During the respiratory movements the lower piece of the sternum with the third rib cartilages moved upwards and downwards in front of the lower margin of the upper fragment. The lower fragment was also fissured vertically downwards for $2\frac{1}{2}$ inches from the line of the transverse fracture, the fissure lying nearer to the right than to the left margin of the bone.

Dark venous blood was oozing freely out of the upper wound, and with the respiratory movements there was a gurgling sound in the wound. I was unable to discover whether the left lung was injured or not. There was no haemoptysis until the onset of “rusty sputum”. At one period of

anaesthesia respiration stopped, but was quickly restored by artificial respiration.

In the depths of the large wound, between the broken ends of the bone, the heart could be seen beating very slowly and feebly under the pericardium. It appeared to be uninjured, but one frequently thought it had stopped.

The wounds were enlarged, cleaned with dry swabs, touched with pure carbolic, and loosely plugged. A bandage was applied with only sufficient pressure to just hold the dressings in place. Hypodermic injections four-hourly of Adrenalin hydrochloride $\frac{1}{1000}$ m.v. and Liquor styrchniae hydrochlorid 1 m.v. were given and continuous steam inhalation. Septic pneumonia of the left being developed, however, and the patient died on the evening of the 31st May.

A CASE OF MESENTERIC THROMBOSIS

BY W. L. HARNETT M.B. F.R.C.S.,

CALTAIN, I.M.S.

THE patient, a rifleman in the 2nd Gurkhas, aged 21, was brought to the Indian Troops Hospital, Dehra Dun, complaining of severe epigastric pain. His history was that he had been ill in the lines for two days, but had not reported sick as it was Saturday and Sunday, the holiday days. He stated that pain in the epigastrium had come on suddenly two days before, and had been continuous and steadily getting worse. There had been an attack of vomiting at the commencement of the illness, but this had ceased after the first few hours. The bowels had been absolutely constipated from the first, and he stated that he had passed no urine for the past twenty-four hours.

Nothing else of importance could be elicited from the man, and the medical history sheet showed only a number of admissions for benign tertian malaria. As he was obviously very ill, he was admitted at once. His condition on admission was as follows. His face was pale and drawn, and he seemed to be in great pain. The temperature was 99° F and the pulse was 86, soft and compressible. The tongue was thickly coated with white fur.

The heart and lungs were normal. The abdomen was distended, acutely tender on palpation, and tympanitic to percussion; there was shifting dulness in both flanks. The liver dulness was normal. No tumour in the abdomen could be felt, but deep palpation was not possible on account of the excessive tenderness. A catheter was passed, and a few ounces of urine were drawn off, which on examination proved to be normal.

About an hour and a half after admission the man suddenly became much worse, the pulse increased rapidly in rate and became weak and fluttering, the breathing assumed the Cheyne-Stokes type, the cornea became insensitive, and

he passed rapidly into a state of coma. Half an hour later he died.

Post-mortem Examination—With considerable difficulty permission was obtained to perform a partial autopsy.

On opening the abdomen a large quantity of bloody ascitic fluid escaped, probably about 12 pints. No blood clots were found in the abdominal cavity. The intestines were greatly distended, and on giving exit to the contents these were found to be a large quantity of odourless gas and thick almost black fluid, consisting mainly of blood.

On examining the intestines it was found that about ten feet of the ileum, from a few inches above the ileo-caecal valve upwards, were deeply congested, almost black in colour and in a condition of incipient gangrene. The central section of the affected area was greyish-black, friable and actually gangrenous. There were no adhesions, strangulation, hernia or twisting of the mesentery to account for the condition. The mesentery attached to the affected portion of the gut was filled with extravasated coagulated blood separating its layers. The main trunks of the superior mesenteric artery and vein were identified and followed down; they and their branches were previous down to the point where they entered the mass of coagulated blood, all the branches from there onwards were thrombosed and could not be followed any further. No emboli could be found either in the main artery or in any of its branches. The mucous membrane of the affected portion of the ileum was thickened by extravasated blood, and in parts friable and gangrenous, as mentioned above.

The rest of the alimentary canal was normal, as also were the liver, spleen, kidneys, bladder, and remainder of the abdominal viscera.

The thoracic viscera and central nervous system were not examined.

In the absence of a complete autopsy it was impossible to ascertain the cause of the mesenteric infarction. Mesenteric thrombosis is one of the rarer conditions giving rise to acute abdominal symptoms, it is met with however from time to time in the practice of every large hospital, and should always be borne in mind as a possibility in an obscure abdominal case.

In the last edition of Osler's Principles and Practice of Medicine, there is a short account of the condition based on a study of the records of 214 cases by Jackson, Porter and Quinby, 30 of these cases having come under the personal observation of one or other of the authors.

The cases are divided into the usual two groups (*a*) acute, (*b*) chronic. The acute cases are almost indistinguishable from cases of acute obstruction, the onset being sudden with colic, nausea, vomiting and sometimes bloody diarrhoea, the abdomen becomes distended, and death occurs in collapse within a few days. The chronic cases are insidious in onset and

there may be no symptoms referable to the abdomen.

The diagnosis is almost impossible, and the acute cases are usually regarded as acute obstruction, the true state of affairs being revealed at the operation or post-mortem examination.

In *The Lancet* of July 30th, 1910, Dr A. Stratton records an interesting case of this condition, in which the diagnosis was further complicated by the presence of an irreducible inguinal hernia. The latter had always been readily reducible, but became irreducible shortly after the onset of the abdominal pain, which, with signs of free fluid in the peritoneal cavity, constituted the main symptoms of the case. Under chloroform the greater part of the hernia was reduced without difficulty, and probably no operation would have been performed but for the fact that the patient had passed 1½ pints of bright blood per rectum just previous to the induction of anaesthesia. The hernial sac was first explored, and gangrenous gut was found without any constriction at the neck of the sac to account for it, on opening the abdomen it was found that the last five feet of the small intestine were gangrenous, the mesentery was congested and there were patches of ecchymosis here and there, presumably the result of mesenteric thrombosis, though no actual thrombosed veins could be found on subsequent examination of the specimen. The damaged gut was resected, the ends closed and a lateral anastomosis with the transverse colon was performed. The patient, after doing well at first, died on the fifth day from persistent diarrhoea. No cause for the thrombosis was found post-mortem.

The causation of this condition appears to be obscure, endocarditis and arterio sclerosis are of course important factors when the arteries become thrombosed, and no doubt occlusion of small branches of the mesenteric arteries occurs not infrequently, but produces no results owing to collateral circulation being established. In the veins thrombosis may be primary, following infective processes in the intestine, particularly around the appendix region, it may be due to a backward extension of a pyelonephritis or it may be secondary, being then a haemorrhagic infarction resulting from the stasis caused by arterial emboli. Infarction of the intestine occurs in the horse in connection with verminous aneurisms of the mesenteric arteries, and is a common cause of colic in that animal.

The only possible treatment is of course resection of the affected portions of gut and mesentery, and end to end or lateral anastomosis, preferably the latter on account of the impossibility of gauging the exact extent of the damaged gut.

Of the 214 cases or thereabouts of mesenteric thrombosis now on record, 50 were operated on and 9 of these were successful. The last of these was reported by Dr E. A. Codman in the *Boston Medical and Surgical Journal* of March 17th,

1910 This case was of the subacute variety, the symptoms having lasted 3 weeks, and consisting of dull pain in the upper abdomen on the left side, made worse by exercise or by eating, and varied by acute exacerbations lasting about an hour. The bowels had acted daily until two days before the case came under observation. Beyond slight fulness and rigidity of the upper abdomen and a leucocytosis of 35,000, nothing could be made out on examination. Whilst under observation the patient was seized with an acute attack of pain in the left upper abdominal quadrant, the pain was constant but attended with paroxysms lasting 10 to 15 minutes. After two hours the abdomen had the rigidity of peritonitis, the patient became intensely pale and the pulse was rapid and thready. Perforation of some viscera was suspected and under the anaesthetic an indistinct mass was felt to the left of the umbilicus. On opening the abdomen much bloody fluid escaped, and gangrene of the upper part of the jejunum was found. The affected portion was resected with its mesentery, and end to end anastomosis was performed. The portion of intestine removed was 4 feet long, and its veins were thrombosed, the middle 2 feet were dark red and a foot on each side was of doubtful vitality. For several days the patient was in a critical condition with a bad pulse, bloody diarrhoea and haematemesis, but eventually he recovered.

The rarity of this interesting condition and the great length of gangrenous gut (ten feet) in my case seem to me to justify the publication of the case, although I am unable to add anything to the existing knowledge on the subject. Unfortunately I was unable to investigate the case bacteriologically, one cannot but think that some interesting facts would almost certainly come to light from a complete examination of such a case by bacteriological methods.

A SIMPLE AND CHEAP LITHOLAPAXY EVACUATOR

BY A J V BETIS

CAPTAIN, I M S,

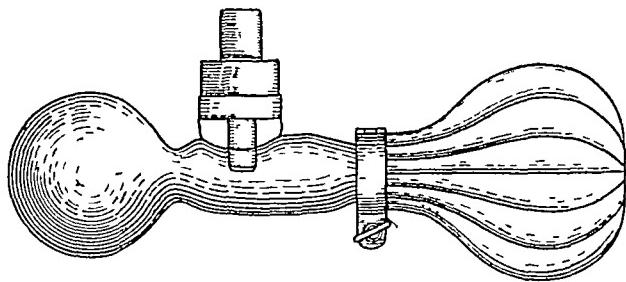
Officiating Civil Surgeon, Nasir

To those who have had the trouble I have had with the cumbersome, heavy, many-jointed and always-leaking evacuators found in most hospitals where stone crushing is done I hope the following will appeal.

To first enumerate the many defects of the present-day evacuators (1) They are heavy in fact heavy is not the word when one considers one end of the cannula in the bladder and the other end fixed but not balanced to a mass of non-taps, rubber and glass containing an unnecessarily large volume of water. The two in

my possession weigh 2 lbs 10 ozs and 2 lbs and 6 ozs respectively (2) The bulb is not sensitive to the contractions of the bladder, it being usually made of thick rubber and of a greater capacity than required and frequently jointed in two places thereby preventing a proper grasp with the palm of the hand (3) The numberless joints, metal to metal, metal to rubber and metal to glass, are a great drawback in that with the wear and tear they are subjected to in hospital practice they almost invariably leak (4) The size of the joint between the cannula and evacuator binds one down to standard sizes. This joint with constant use becomes loose, leaks and causes much annoyance.

Some surgeons may be of opinion that an evacuator can be dispensed with, and I certainly managed for some two months without one, using the bladder itself as an evacuator after what I believe is known as the Hyderabad method, viz shaking and coaxing the fragments out with the cannula. But I felt the want of an evacuator in getting rid of the last fragments and in satisfying myself by the absence of 'click' that no fragments were left behind.



I have now had made for me by Messrs Down Bros., an evacuator which I find satisfactory in every way, the main points about it being that (1) It is light and when full of water weighs 1 lb only (2) It consists essentially of three pieces, two of rubber and one of glass all of which parts can be replaced when worn or broken by duplicates which are so cheap that they can always be kept in hand (3) The rubber corks can be bored to take any size of evacuation cannula (4) The bulb of 4 ozs capacity is quite large enough and is made of thin rubber. This enables the palm of the hand to grasp the whole bulb and to estimate accurately the tension of the bladder, a most important point especially in children (5) The Down's hinged clamping collar shown in the illustration is a useful addition but is not essential as a piece of tape would do (6) The joint between the cannula and evacuator is resilient and not rigid. There is no difficulty in inserting the cannula into the hole bored in the rubber cork and it is a perfect joint.

To be sure that no fragments are washed back into the bladder it is an advantage to have the

cannula passing right through the rubber cork into the glass chamber, and if the projecting eyelets found on most cannulas are removed this can easily be done. Or a small metal tube can be used passing through the rubber cork as shown in the figure and the cannula attached to it.

The only difficulty one may experience with this evacuator is in filling it with water and expelling all air. With a vessel sufficiently large for its complete immersion and little practice I find one's attendants can easily accomplish this.

To recapitulate the points claimed for this evacuator are its simplicity, lightness and cheapness, its adaptability to both children and adults, and the fact that half a dozen spare rubber corks and one or two spare bulbs can be kept in reserve at a trifling cost rendering the instrument always serviceable.

NEW PATTERN URINAL (FOR USE IN FORTS)

BY E. C. TAYLOR

CAPT., I.M.S.,

Civil Surgeon, Tochi

GENERAL

A new pattern urinal has been designed for use in the forts in the Tochi Valley. As this

avoiding the necessity of having receptacles full of urine standing about inside.

(e) Which would not be a danger if the fort were attacked.

(f) Which is cheap.

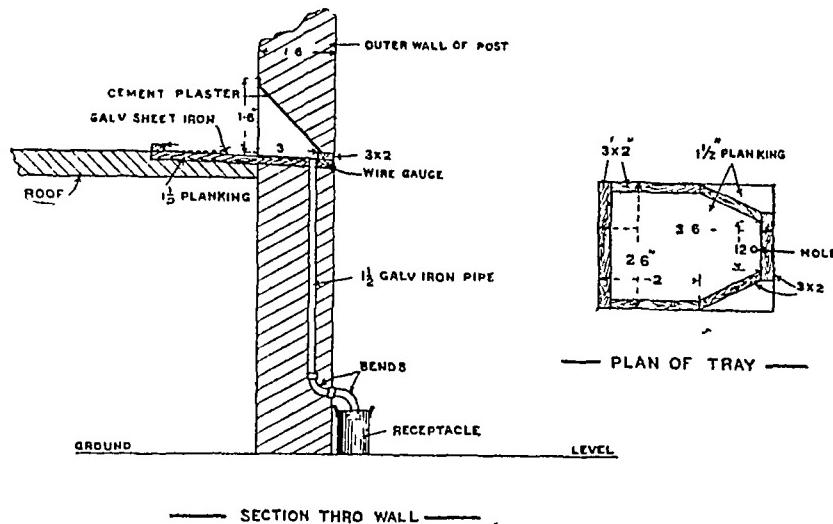
It is claimed that this pattern fulfils these conditions.

GENERAL DESCRIPTION

The urinal, as may be seen from the drawing, consists of a tray of galvanized iron sheet fixed on to a wooden base. This is placed on the same level as the roof from which the men urinate and is let into the outer wall of the fort until its outer edge is flush with the exterior of the wall.

A few inches from its outer edge there is a hole in the tray about one inch in diameter. Closing this hole and placed between the iron sheet and the wooden base is a small piece of wire gauge. A $1\frac{1}{2}$ inch diameter galvanised iron pipe is then let into the outer face of the wall until it is slightly sunk in it, and is then screwed into the wooden base immediately below the hole in the iron sheet.

At the bottom of the pipe two right-angled bends are attached and beneath the end of the lower bend a receptacle is placed. The pipe is then plastered in with mud until the wall is flush. The surface of the wall round above the urinal is cement plastered.



type would be equally useful in any other fort a short description is given.

The problem was to obtain a urinal

(a) To be placed on the roof of the ground floor.

(b) Which the men would use in preference to a loophole or purinal.

(c) Which would not spill.

(d) From which the urine is conducted at once outside the outer walls of the fort, thus

Cost
(In Manzah Post, Tochi Valley)

	Rs	A.P.
1 1/2 inch galvanised iron pipe* 11 ft @ As 8/- per ft	5	80
1 1/2 " bends 2 ft @ As 14/- each	1	120
Wood work 44 c. ft @ Re 1 10/- per c. ft	1	24
1 1/2 inch planking 8 75 sq. ft @ As 4/- per sq. foot	2	30
Galvanised sheet iron 12 sq. ft @ Rs 35/- per 100 sq. ft	4	32
Labour—Job	4	80
Materials—Job	1	116

Rs 21 0 0

* Depends on height of wall.
† Rate includes carriage.

Indian Medical Gazette.

AUGUST

A PLEA FOR PRIMITIVE METHODS IN RICE MILLING

THIS* is a very valuable report, written by Major Griege I.M.S., who has been on special duty under direction of the Central Research Institute, for studying this somewhat mysterious disease which has of late years reappeared in Calcutta and in many parts of the two Bengals.

We need not enter into a history of this disease as it is well known to our readers. A full description of it was published in these columns in 1880 by Colonel Kenneth McLeod and the same author has written the account of disease in Allbutt's *System of Medicine*.

Within the last two years the question of the identity of the disease with the wet forms of beri-beri has been much discussed, but we find no mention of this matter in the present report though such may be expected in the final report promised by Major Griege.

The main conclusions arrived at by Major Griege may briefly be given as follows —

(1) No *causa morbi* is to be found in the blood or body fluids.

(2) The features of epidemic dropsy very closely resemble what has been called "Ship beri-beri."

(3) The disease is not infectious.

(4) It is a nutritional disease and is brought about by a "onesided" dietary.

(5) The Maiwari community in Calcutta lived in the heart of the affected area, yet entirely escaped, but their dietary is much richer in certain important constituents (phosphorus, etc.) than that of Bengalis who were much affected by the disease.

(6) Analysis shows that rice prepared in steam and other mills is so "polished" that constituents essential for nutrition are removed from the rice, and also that the wheat *atta* used in Calcutta is so finely sifted that it is also deprived of these ingredients even to a greater extent than the rice.

(7) Pigeons fed on polished rice boiled and unboiled, suffer from loss of weight and from a characteristic polyneuritis.

(8) The severe outbreaks of this disease in Calcutta in 1877-79 and 1907-09 are correlated with a high price of food and the cessation of the epidemics has synchronised with a fall in the price of food.

It will be observed that these conclusions very closely resemble those arrived at by Braddon, Fraser and Stanton in their work on beri-beri in the Malay Peninsula.

It is therefore clear that the use of highly polished and elegant looking rice is more dangerous than the cheap and coarser varieties, and the same remark applies to finely mill-ground wheat *atta*.

We are not convinced by Major Griege's arguments of the identity of Epidemic dropsy with the *morbis bengalensis* described by Norman Chevers in Calcutta in 1870, though we agree that Chevers was right in advocating a higher staple of food for the rice-eaters of Bengal.

Beri-beri in Malaya and epidemic dropsy in Calcutta seem to result from one main cause viz the too entire dependence as a food on rice which has been so prepared by modern machinery that it has lost in the polishing process essential constituents. This mainly affects those who use rice or finely sifted wheat as their main article of diet. If a less "onesided" diet is used, as in the jails of Bengal where pulses (*dal*) are largely issued, these diseases will not appear. The addition of *mung dal*, or of fish or meat will prevent this disease, provided the *dal* or meat is actually eaten.

In many respects the discussion on epidemic dropsy and on beri-beri resembles the newspaper agitation during the past year in England on so-called *standard bread*. In England little or no bad effect is felt from the consumption of the ordinary white loaf among the better classes or among well-paid artisan families who use plenty of meat, etc., in their dietaries. It is the class of persons chiefly women, who consume largely bread and tea who suffer from its effects in England. In the East it is those who use rice largely and use very little meat fish or *dal* who suffer from beri-beri etc and no doubt the prevalence of high prices prevents the poorer classes from purchasing the meat, fish or even *dal* which in happier times they are accustomed to.

* Epidemic Dropsy in Calcutta, Scientific Memoirs No. 45, by Major E. D. W. Griege, M.D., I.M.S. Superintendent, Government Printing, Calcutta, 1911.

The moral of this is plain to see, and that is—a return to the more primitive methods of preparing these staple articles of food.

We have no hesitation in stating that if the people of Malaya or of Bengal were to give up the use of these foods *as prepared in modern mills* and were to prepare them *neat in the primitive denki* and then wheat or maize *atta* in the primitive grinding stone mills there would be no fear of these foods being deprived of their essential constituents and there would be no fear of either epidemic dropsy or of beri-beri.

In a majority of Bengal jails *atta* and rice are prepared in this primitive method and with the result that these diseases are conspicuous only by their absence.

In the Transvaal (where what is called "scurvy" has been much discussed as it affects the native mining population there and in Rhodesia) more than one writer has compared beri-beri with scurvy. It is quite possible that some of what used to be called "sea scurvy" or "arctic scurvy" is closely allied to beri-beri.

Current Topics

I M S PENSIONS

We are glad to see the publication in the *Gazette of India* (July 1, 1911) of the following revised list of pensions for I M S officers, a reform which we have always advocated—

"With the approval of the Right Honble the Secretary of State for India, the following graduated scale of pension for the officers of the Indian Medical Service is sanctioned, with effect from the 1st April 1911, in supersession of the scale hitherto in force."

After 17 years' service	£
" 18 "	300
" 19 "	320
" 20 "	360
" 21 "	400
" 22 "	120
" 23 "	140
" 24 "	460
" 25 "	480
" 26 "	500
" 27 "	540
" 28 "	580
" 29 "	600
" 30 "	620
" 27½ "	660
" 30 "	700

2 The concession authorised in paragraph 6 of G. G. O. No. 1047 dated the 24th October 1903, under which officers of the Indian Medical Service on the list of selected Lieutenant-Colon-

nels are permitted to remain in the Service beyond the age of 55 years in order to qualify for the pension admissible after 30 years' service shall cease in the case of officers entering the Indian Medical Service on or after the 1st April 1911."

There is no doubt but the Service is much indebted to the Director-General for this improvement and the fact that it is not accompanied by a cessation of the concession of extending service to complete the 30 years' service for pension is a boon which will be appreciated by a large number of officers who entered the Service too late to be able to put in 30 years' service before reaching the fated age of 55 years, and it is only fair that with such a liberal choice of pensions such a concession should ultimately cease, and it will therefore not apply to all future entrants to the Service.

It will be seen that the pensions at the old fixed dates of 17, 20, 25 and 30 years are not increased and even the half-way pension at 27½ years a recent useful concession, still remains.

A Captain's critic has pointed out that this yearly rate of pension is only what is given to the Uncovenanted Services by the Civil Service Regulations. Be it so, it is all the more necessary that it be applied also to a Commissioned Service like the I. M. S.

It is very difficult to say what the effect of this list will be on senior men. Most of us will probably decide according to what best suits ourselves and circumstances. In a couple of days over 12 months a man of 27—28 years' service has 3 choices, £580 at 27 years, £600 six months later and £620 if he holds on for another half-year.

On the whole, the new rates are a great boon to the Service and will be gratefully accepted by it.

HEAD MEASUREMENTS AND HARD OR SOFT PILLOWS

Our attention has been called by the Census Superintendent Bengal, to the following article of which a précis is given, from the *Muench Medizin Wochenbuch* (17th Jan '11) by Dr Walcher.

It is certainly of interest and must attract the attention of anthropologists, but that the racial differences in dolichocephaly and brachycephaly are merely due to the use of hard or soft pillows in infancy will not easily be believed, and Dr Walcher has given no proof of the different habits and customs of races and tribes in this matter. The précis of his article is as follows—

The writer says that in 1905 he first drew attention to the changes which can be made in the shape of the skull of newly born infants by inducing them to lie constantly on the side or on the back, according as it is desired to make the head long or short. In his present

paper he gives the results of some further experiments in the same direction. Infants willingly lie on their back, if they are given a soft feather pillow. If, on the other hand, a hard pillow is used, they prefer to lie on the side. With very small babies nothing further is needed to induce them to lie on the back or side as desired but when they get older and begin to take an interest in things it is necessary for those who are to be kept on the back to be given a very low bed, with opaque sides and playthings hung up above while for those whom it is desired to induce to lie on their sides, the bed should be higher with open sides, and then playthings should be at the side and not above the head.

The change in shape is greatest in the period immediately after birth, when the bones of the skull are very soft. Whether these artificial changes can be continued in the second year of life is less certain. Several diagrams are given showing progressive changes in head shape. One child, for example, who was kept on his side, when measured on the 26th of February 1910, had as his cephalic index 79.1, on the 1st of April 77.1, on the 3rd of May 76.8 and on the 2nd of June 73.8. Two pictures are given of twins showing that one who was kept on the side had a long head (index 78.4) and also a long face, while the other who was kept on the back had a short head (index 86.2) and a short face.

The inquiries are still too recent for it to be possible to say from actual measurements how far these head shapes remain in later life, but it is mentioned that a child whose index at birth was 80.6, and at fourteen months, when the experiment ceased, 73.0, has now, four years later, an index of 74, although since the experiment ceased he has been allowed to sleep on a soft pillow. This child belonged to a brachycephalic family, the index of the father being 84, that of the mother 83, and that of his sister 81.5. It is most unlikely that in the future the shape of his skull can change sufficiently to resemble that of the rest of the family.

In view of the above facts it seems impossible to speak of dolichocephalic and brachycephalic races. Even though certain races bring into the world children of a given head shape, the subsequent artificial changes are so great as to obliterate the original congenital type. Similarly when skulls of different shapes are found in prehistoric graves, it is unscientific to conclude that there has been a mixture of different races. All that can be concluded is that as children some had soft pillows and others hard.

It is disappointing to think that the numerous head measurements collected with endless industry by anthropologists have thus been shown to be worthless, but we may console ourselves with the thought that all scientific work brings its own blessing.

The author explains in conclusion that the head shapes he has illustrated were prepared with the aid of a flexible wire, the length and breadth being tested by callipers as a control. He begs all who are in a position to make experiments with children over a lengthy period to investigate the question further on the lines he has indicated.

NURSING IN CIVIL HOSPITALS IN INDIA,

WE extract the following interesting note on the nursing of civil hospitals in India from the *Nursing Journal of India* (Vol II, No 4, April 1911, p 117).

"Many hospitals in India have no nurses at all. I believe almost every woman's hospital makes an attempt at nursing, if it goes no further than having a *dhar* on the premises."

In some Civil Hospitals—as was the case in Europe until the last century—the nursing is carried out by the relations of the patient, and the patients would no doubt have much to say in

favour of this system. The idea of '*purdah*' wards' too seems to be a retrograde step in this direction—as no proper nursing can be attempted where each patient is in a separate house surrounded by well-meaning—if dangerous from our point of view—friends and relatives.

On the whole, the women's hospitals out here compare very favourably with the men's in this respect. I should say they were distinctly in advance as regards nursing, and this is likely to remain so unless some enterprising Civil Surgeon starts a class for men nurses. In this country one can never imagine its being desirable or possible for men to be nursed by women, and this accounts for the absence of nursing in most of the Civil Hospitals, and attempts to mix the sexes—by training Indian girls to nurse men—must fail because there is difficulty in getting them to undertake nursing at all—and it is as impossible as it is undesirable that they should nurse men.

The only field for Indian nurses out here is in nursing women and children, and so far no organised effort has been made to train them. The Cama Hospital, Bombay, has the best school I have seen, because it is possible for them to go there and learn to nurse only women and children. Numbers of Mission Hospitals train their own nurses, and draw their nurses often from girls who on account of their age and inexperience need very careful looking after but the nursing in these hospitals reaches a high standard.

The most satisfactory results I have seen as regards nursing in Zenana Hospitals were those run by nuns where the bulk of the work was done by these ladies and a certain number of native girls were trained under them."

THE LIVERPOOL ANNALS OF TROPICAL MEDICINE

THE April number of these Annals (Vol V No 1), contains several articles of exceptional interest. Capt R McCarrison, M.S., republishes his Royal Society article on goitre, which we have already given an extract of, and an amplification of, in recent issues—(I.M.G., July, 1911).

Capt Markham Carter, M.S., has a good article on a "Non-Ulcerating Oriental Sore". He describes three varieties of oriental sore, viz., the non-ulcerating, the flat superficial and the deep-seated oriental boil.

This non-ulcerating type is said to be common in India, seven cases being found in 2,000 persons attending at the Pasteur Institute at Kasauli. The parasite of this "sore" resembles strongly a parasite infesting the intestinal tract of the *Ethesina fullo*, a pentatomid bug. The paper is admirably illustrated.

Dr Critien has a valuable paper on infantile Kala-azar or as he calls it infantile Leishmaniasis known in Malta as *Manda tal Bicca*. It is

met with almost exclusively in young children and is nearly almost fatal.

It is insidious in origin with spells of slow fever which attract but little attention, till the child becomes pale and begins to lose flesh. Several cases are apt to occur in one family.

The specific cause is a protozoan of the genus *Leishmania*. Dogs also suffer and it is probable the dog is an important factor in spreading the disease.

Dr D. Thomson has a valuable article on the production of life and death of crescents in malignant tertian studied by an enumerative method. From his work, he makes the following deductions —

(1) It is bad practice to give quinine in small five grain doses or irregularly even in larger doses, as such treatment tends to increase the power of crescent formation.

(2) All cases of malaria should be treated early and continuously with 20 or 30 grain doses of quinine, as such treatment during and after the fever diminishes the subsequent formation of crescents.

The late Sir Robert Boyce whose book on Yellow Fever we have elsewhere noticed, writes upon yellow fever in the black races.

Dr H. B. Pantham has an article on intestinal amoebae which we hope to quote more fully on another occasion.

AMERICAN VIEWS ON HYDROCELE

The special genito-urinary issue of the *American Journal of Surgery* (May 1911) has among other good articles one on hydrocele, from which we make the following extracts. Surgeons in India have an infinitely larger experience of hydrocele than the surgeon in Europe or America, and the hydroceles met with in many parts of India, especially the East Coast, are much more difficult and complicated than the ordinary hydrocele of other countries. In the extract below we note that the method of eversion of the sac is called "Jaboulay's Operation." In India this is known as "Pratt's Operation" (see *I. M. G.*, Vol. XLII for 1907, where much discussion took place on the subject of hydrocele).

"I. The simple incision of the tumour known as Volkman's operation, which consists in laying open the tumour irrigating the cavity with a 3 per cent solution of carbolic acid, suturing the edges of the serous membrane to the margin of the scrotum and packing the cavity with iodoform gauze until it closes by granulation. The disadvantages of the method are that it frequently fails either from some patch of the serous surface not being destroyed and covered with granulations, or from a diverticulum being overlooked or in cases of communicating hydrocele when the

openings are imperceptible. Moreover, the advocates of this method tell us that if one is rigidly aseptic he may fail to obliterate the sac. They do not state how 'septic' one dare to be. I think that in this aseptic era there is no excuse for any operation, no matter how trivial, where the strictest asepsis should not be carried out.

2. The second method, known as the eversion method or Jaboulay's operation, consists in making an incision down to the sac (and if this is too large, a portion is excised), which is then everted, one or two sutures fix the sac behind the testicle, the skin is then closed over. The disadvantages of this operation are that the everted serous membrane may continue to secrete and the fluid dribble out through the skin wound. Or the function and nutrition of the testicle may be interfered with.

3. The third method, or complete removal of the serous membrane, is known as Bergman's operation. It never fails to cure, it keeps the patient in bed less than any of the two preceding methods, and experience has shown that it does not interfere with the nutrition or function of the testicle. Moreover, in cases complicated with hernia or varicocele these troubles can be attended to at the same sitting. The operation is easy of performance. Incise the tumour until fluid escapes and then proceed to peel off the serous coat from the fibrous until the edge of the epididymis is reached and all the secreting surface is removed. Then reset it all. Be sure to ligate all the bleeding points and then insert a strip of rubber tissue to drain the cavity which is otherwise closed with plain catgut preferably in two layers, allow the patient to sit up in bed in five days and to be out of bed in seven days, wearing a snug suspensory bandage. There should be very little reaction from this operation. If more than the one sac is discovered treat it in a similar manner. If hernia or varicocele should exist, they can be dealt with at the same time."

DISAPPEARANCE OF BERI-BERI IN PHILIPPINE SCOUTS

MAJOR W. P. CHAMBERLAIN, Medical Corps U. S. A., reports on the disappearance of beri-beri from the Philippine (Native) Scouts by changes made in the rations. The main point of the article is that the addition of leguminous articles to the diet got rid of the beri-beri even before it was possible to get into use the under-milled rice which it was intended to substitute for the highly polished article which all recent research shows is the main cause of beri-beri. The articles added to the dietary were carottes, a kind of sweet potatoe and "mongo," better known as *phaseolus radiatus*, a variety of pulse (or dal). Some of the "under-milled" rice was very

coarse, the Board now recommends a high grade rice, but it must be "undermilled," i.e., with much of the pericarp left on.

Major Chamberlain concludes that the "real factors in the eradication of beri-beri from the Scouts have been a reduction in the amount of rice consumed and the addition of legumen, and this result was accomplished without the use of undermilled rice."

We in India can understand these results. Polished "Burma" rice has largely been used, e.g. in the jails of Bengal, without any harm resulting, and this we have always maintained is due to the fact that in the jail dietaries there is a large proportion of pulses.

This question of polished rice is somewhat like the newspaper agitation over so-called "standard bread" in England. For the classes who can afford plenty of other kinds of good food it does not matter whether the bread is "standard" or not. The question is only of importance to those who depend largely on bread or bread and tea for their food. Those who depend mainly on bread or mainly on rice will suffer from the deficiencies of the overmilled wheat or rice, but those in whose dietaries bread or rice form but a small portion need not worry and may continue to use the highly milled wheat or rice. In the native dietaries of Bengal the constituents needed which are absent in the polished rice are supplied in the *dal* or fish eaten along with the rice.

A SAFE AND EFFICIENT ANTIRABIC VACCINE

It is known that a Committee recently met in Simla to decide upon the important question of the propriety and safety of sending out a safe and efficient antirabic vaccine which would obviate the present necessity of journeying to Kasauli or Coonoor for treatment of the effect of bite of rabid dogs.

This step has already been taken in other countries, and vaccines for this purpose are advertised in reputable American Medical Journals, and an article in the April issue of the *Bulletin* of the Medical Society of Manila shows that the system is already in force in the Philippine Islands.

We therefore direct the attention of our readers to the valuable, practical and useful Memoir (Scientific Memoirs No. 47 by Sir David Semple of the Central Institute, Kasauli) on this subject. As this Memoir has been circulated all over India, we need not here do more than call our readers' attention to it.

It is obvious that if this treatment can be carried out in the patient's home or in a local hospital, it will be a great boon to patients. A long and expensive journey will be saved and what is even more important there will be much less

delay in commencing treatment. Again, the funds now collected for special Pasteur Institutes in provinces which now have none will be able to be directed towards the even more necessary equipment of Bacteriological Laboratories in every province, which will be of the greatest value to all medical men working within the area.

INTESTINAL PARASITES IN THE PHILIPPINES

In the *Philippine Journal of Science* (Feb 1911) Dr D G Willets has a valuable article on the intestinal parasites of the tobacco workers in the Philippine Islands. Out of 4,278 examined no less than 85 per cent were affected, 62 per cent with *ascaris*, 54 with hookworm (*ankylostoma*), 7 per cent with trichuris and to a small extent with other worms. This percentage closely corresponds to the figure given by Garrison and other workers on the same subject in Manila, and very closely corresponds to the figures published over ten years ago in India by Dobson, Giangani, Fearnside, Calvert, Maddox, C Lane and others.

There can be no doubt that many natives can and do harbour such worms without any noticeable deterioration of their health. Dobson, twenty years ago, at Dhubri showed that practically all "healthy" coolies for the Assam tea gardens harboured the *ankylostomata* or other parasites. The only attempt we know to prove the damage done by these parasites if moderately present has been in the Bibbid Prison (Philippines). Here war against these intestinal parasites coincided with a sudden and remarkable improvement in the health of the prisoners, but in our opinion the whole of the improvement cannot have been due to the getting rid of the parasites. Coincident with the attention paid to parasites were other minor sanitary reforms, and at any rate the sick were promptly and thoroughly looked after, and let the theory be what it may, such prompt attention will always result in improvement.

The following Memorandum, dated Simla, 23rd May 1911, has been circulated by the Director-General, I M S —

"It is notified for information that the Royal Institute of Public Health, Russell Square, London, has offered to admit gratuitously two Indian Medical Service officers yearly to work in their Laboratories for 6 months. Practical instruction is given to medical men desirous of qualifying as Medical Officers of Health, and a special Laboratory has been provided for serological work and such methods of examination as Wasserman's reaction.

Officers wishing to avail themselves of the offer of the Institute during their study leave, should apply officially when submitting their leave applications."

The Edinburgh Medical Journal (June 1911) has a special number devoted to the centenary of the birth of Sir James Y. Simpson born 7th June 1811 and died 6th May 1870, "to whose genius and benevolence the world owes the blessings derived from the use of chloroform for the relief of suffering" (as the words run on his bust at Westminster).

DR C. F. CRAIG, U.S. Army whose work on the malarial fever is well known, has in article in *Archives of Internal Medicine* (January) in which he attempts to prove that blackwater fever or haemoglobinuria is practically never due to malarial infection and practically never to the use of quinine. Dr. Craig considers the disease due to a not yet isolated parasite.

REVIEWS

Diseases in Bone and its Detection by the X-Rays—By EDWARD W. H. SHINNOR, M.R.C.S. (Eng.), F.R.C.P. (Lond.) Senior Surgical Radiographer, Guy's Hospital. 72 pages, and 12 X-Ray plates. Messrs. Macmillan & Co., Ltd., 1911. Price 6d net.

The value of the X-Rays in diagnosis, and particularly in bone diseases, is becoming recognised more and more by surgeons every day. This little book pleads for a routine examination of bone conditions by the Roentgen rays, and deals with the numerous pathological conditions in which an experienced radiographer can make a definite diagnosis at once. The author, whose radiographic experience has extended over some fourteen years, lays stress on the fact that the ordinary surgeon cannot hope to be able to read an X-Ray plate with the extreme accuracy which is essential. Those who have done much X-Ray work will at once recognise the truth of this statement, but surgeons cannot be made to realise that this is the case.

A book of this size cannot be expected to deal with so comprehensive a subject as disease in bone in all its X-Ray aspects, but it contains much valuable information based on long experience of the subject, and the X-Ray plates are carefully selected and excellently reproduced.

The Principles of Gynaecology—By W. BLAIR BELL, B.S., M.D. (Lond.) Published by Longmans, Green & Co.

Anatomy, physiology and pathology are the foundations on which modern medicine and surgery are built. What other principles the author invokes we have been unable to discover but we have no desire to cavil at a volume intended for students and young practitioners which seems to mark an epoch. Most of the older and

even of the recent text-books approach Gynaecology almost entirely from the clinical side and compilations of symptoms and signs with therapeutic indications thrown in. We mean no disrespect to clinical knowledge, but its scientific appreciation can best be attained by a simpler and more logical arrangement of symptoms and signs than is to be found in the grandmotherly text-books of the past. Howard Kelly was a leader in this direction, but his productions are complete systems. Dr. Blair Bell aims in a similar manner at making the facts of gynaecology intelligible to students by linking them with the data of his speciality.

The first portion of the book deals with these data, but perhaps we had better avoid that term since some of the author's statements, as for example on the physiology of menstruation, are still open to dispute. On the whole, however, this section is a lucid statement of well-established facts which happily leads up on the one hand to the discussion of congenital and acquired anatomical derangements, and on the other of physiological disorders related to menstruation and conception. On this follows the discussion of the infective and parasitic diseases of the genital tract, its cysts and its neoplasms. Finally, there is a section all too brief on the chief operative procedures.

His treatment of his subject is simple, logical and lucid, and we congratulate Dr. Blair on having brought the results of scientific gynaecology within reach of the average student, a realization which his publishers have done much to help.

Enlargement of the Prostate, its Treatment and Radical Cure—By C. MANSELL MOULLIN, M.B. (Oxon), F.R.C.S. Fourth Edition. Published by H. K. Lewis.

In recent years there has been so much heated discussion on the relative merits of the supra-pubic and the perineal routes for prostatectomy that it is a pleasure to find the success of a fourth edition accorded to the work of a surgeon who without bias considers the indications for one or the other operation. Mr. Mansell Moullin does more than this practically all it is necessary to know about the etiology and symptoms, the palliative and the radical treatment of prostatic enlargement is included within the compass of this small volume. If anything, his leaning is towards the perineal operation which he considers to be the more scientific and accurate, with simpler after-treatment and more rapid convalescence, to say nothing of the lower mortality which in the hands of Young of Baltimore has been reduced to 2 per cent. Ficyer's statistics for the supra-pubic operation are ever before us and are as brilliant. From them it would seem that enucleation is only a matter of a few minutes

How surcharged with effort these minutes may be is determined by the personal equation, but there seems no doubt that for the beginner the anterior operation is the easier even if he fail to strike the right plan of cleavage. It is not always possible to be sure that one is dealing with an adenomatous prostate, for which the anterior route is always easiest and there is this much more to be said for the perineal route that through it one is enabled always to complete the operation.

We congratulate author and publisher on this fourth edition and trust that it will help towards increasing resort to an operation for which there is much scope even in this country.

The Life History, Function and Inflammation of the Appendix—By EDWARD M. CORNFORD, M.A., M.C., F.R.C.S. An address delivered to the Clinical Society of Manchester, January, 1911. London: John Bale, Sons & Danielson, Ltd. Price 1s. net.

This Address, which is now published in book form makes interesting reading. The author lays great stress on the fact that it is in the caecum that active putrefaction of the intestinal contents first take place. It is his belief that this accounts for the enormous amount of lymphoid tissue which occurs in the ilio-caecal region its function being to keep within safe limits the activities of the countless bacteria at work. This view is held by many. Many other interesting points are discussed bearing on the pathology and treatment of appendicular inflammations, which cannot be mentioned here. It will repay those who are interested in this subject—and who is there who is not?—to read the paper for themselves. An interesting reference is made to those "unconscious, undiagnosable unrecognisable" cases of appendicitis which it has been the lot of many of us to come across. The author suggests that the propulsive contractions of the large intestine start at the appendix, and that this accounts for the constipation and other bowel troubles so often associated with appendix trouble. This may well be so, but we are not inclined to agree with the view that after appendicectomy these contractions shift their place of origin to the healthy 'caput cæci'. It seems more reasonable to think that they then spring from the healthy remains of the appendix base.

Yellow Fever and its Prevention—By SIR RUBERT BOYCE, F.R.S. London: John Murray. Price 10s. 6d. net.

SIR RUBERT BOYCE whose death we regret to see announced just as this notice is being written the Holt Professor of Pathology in the University of Liverpool and Dean of the Liverpool Tropical School, has written several books lately, and we recently favourably reviewed a book of his on

Health Administration in the West Indies. The present handsome volume deals with Yellow Fever a disease, which (as Major Gordon Tucker, I.M.S. of Bombay, has pointed out in a lecture which some months ago was widely circulated in India) may one day concern us in India, when the opening of the Panama Canal a few years hence brings us closer in contact with the endemic areas of this fell disease. Yellow fever has never been a disease of Asia, its endemic centries have been on both sides of the Atlantic, on the west coast of Africa and the east coast of America from New York to Monte Video.

It is a very ancient disease and existed in Central America before the arrival of the Spanish *Conquistadores*. In Panama it was endemically present from earliest times till 1905 when the despotic hygiene of the Canal Commissioners banished it, for ever we may hope.

The connection between yellow fever and the mosquito has been more than suspected since the work of Beauperthay in 1850-60, and Charles Finlay of Havana in 1881 called attention to it. The work of Reed, Carroll, Gauertias and Aguinante have since established the connection, though the ultra-microscopic virus has not yet been isolated. The disease is carried by the mosquito *Aedes vexans* which has a widespread distribution, and is here recorded as having been found in the Andaman Islands, Assam, Lushai Hills, Burma, Bhim Tal, Calcutta, Ferozepore, Kumaon, Lucknow, Madras, Purnea, Quilon, and Travancore.

Another important matter cleared up by Sir Rubert Boyce is that of racial immunity. He decides that no race is exempt, it is entirely a case of immunity acquired by an attack of the disease in early life. It is, therefore, a disease of newcomers into the endemic area.

We cannot find space to go further into the many questions treated of in this book. It is a valuable one and will be of great value in all countries liable to the invasion of yellow fever.

Text-book of Operative Surgery—By DR. THEODOR KOCHER. Third English Edition. Published by Adam and Charles Black, London.

This work of Dr. Kocher has met with a success among the English-speaking public such as is accorded to few foreign text-books. Some of us can remember when the original translation appeared as a slim volume of about two hundred pages and made its mark then by the originality of the methods advocated and the brilliancy of the technique suggested by a surgeon who had already become eminent in Europe. It was the personal note that gave the book its charm, and carried conviction to the reader that what was here recommended had stood the rigorous tests of a surgeon of wide experience and matured judgment, who is taking us into his confidence unfolding to us the secrets of his success. This

characteristic remains though the book has grown to a bulky volume of over seven hundred pages, has been largely rewritten and is now exuberantly illustrated, sometimes in colour.

Pre-operative and post-operative treatments are dealt with in the first eighty pages wherein will be found very full details regarding anaesthesia and especially regarding local anaesthesia which has not had the attention it deserves in this country where climatic conditions debar one the use of ether.

The next hundred pages are devoted to the surgery of the vascular system inclusive of veins and lymphatics. This was perhaps the most striking portion of the original edition, and we venture to think that Prof Kocher's normal incisions for attacking the great vessels have become the normal of most surgeons who aim at causing the least disfigurement and inconvenience.

We have said that a personal note pervades this book, but it in no way hinders a generous appreciation of the work of others as may be seen in the next section, on the Nervous System, where one finds friendly acknowledgments of the brilliant work of Horsley and Balance in England and Cushing and Frazer in America.

Perhaps nowhere in the whole volume will the general practitioner get better value than in the section on the surgery of the extremities where the claims of 'normal' incisions are most strenuously upheld because they do the minimum of injury while affording perfect exposure of parts. The stereotyped incisions of English text-books have here no place and we would draw special attention to the methods of approach to the joints that are recommended.

There is no field of surgery which Prof Kocher has not helped to illuminate, and it is unnecessary that we should follow him through the length of this volume, but the surgery of the thyroid is peculiarly his own, and those to whom befall opportunities in this direction would do well to consult the condensed account of his methods which are beautifully illustrated in colour.

In no small measure is the success of this book due to the translators who have done their work so excellently that it is hard to believe this volume to be of German origin and the publishers also have done their utmost to make the volume worthy of its eminent author.

Radium—By DAWSON TURNER Published by Baillière, Tindall & Cox

This little volume deals briefly and completely with the properties of radium both from a therapeutic and physical point of view. Briefly dealing with the observations on the various phenomena which lead to the discovery of radium itself, the author passes to the physical properties of the element, and goes into the differentiation between the alpha, beta and gamma rays. The

relationship existing between radium and helium by means of the emanation is made clear and the behaviour of the emanation in losing its activity while the radium regains its activity is shewn diagrammatically. Nearly two-thirds of the book are devoted to the therapeutic uses and modes of application of radium and its salts.

From cases quoted it is encouraging to learn that beneficial effects have been observed in a number of diseases which at present frequently offer almost insoluble problems to the therapist as well as the surgeon. Particularly hopeful appears to be the treatment of inoperable and recurrent neoplasms. Time has yet to show that these results can be termed 'cures,' but it certainly appears that life may be prolonged.

The Crossfire method of treatment by internal and external applications to the tumour simultaneously seems to give promise of good results. Compared with X-ray treatment it seems that similar effects are obtainable in less time by radium.

To those who are fortunate enough to possess a supply of radium, this volume will prove a short and valuable guide to its use.

An Introduction to Biological and Enzyme Chemistry—By G J FOWLER, D.Sc., F.R.C.P. Published by Edward Arnold, London.

This book is probably about the first work to set forth, within small compass, most of the modern research work on enzymes and fermentation. A study of this subject, of course, presupposes a considerable knowledge of many organic bodies, such as sugars, alcohols, albumen and their derivatives. Consequently, a very fair proportion of the book is taken up with a brief outline of the chemistry and structure of these bodies. We consider that it is in this particular point that the book is such a great success. For instance, Chapter 3 is taken up with "some leading conceptions in organic chemistry." It is about the clearest and most lucid survey of the organic chemistry that we have ever met with, and it is of particular value to medical men who have no opportunity of keeping up the organic chemistry which they were required to study for their various degrees.

The work opens with a preliminary chapter on chemical action of living matter and proceeds with a description of ordinary bacteriological technique. Chapters 3 and 4, as already mentioned, are largely taken up with the organic chemistry and with a description of such bodies as sugars, etc. Then follows (Chapter 5) the work on the various enzymes, commencing with amylase and the "starch splitting" ferments. The enzyme's action in the growing plants, invertase and maltase, the alcoholic fermentation of sugar are next described in order with the chemistry of the reaction. Chapter 10 gives an

account of the fermentation of cellulose due to organism. This is of course, of considerable importance in dealing with septic tanks, particularly in the tropics, where the temperature is extremely favourable for the breaking of the cellulose. Fat splitting, oxidising and clotting enzymes are also considered.

Towards the end of the book are two extremely interesting chapters (13 and 14), giving a description of what is termed the nitrogen of the sulphur cycle in nature. It would take too much space to review or even to outline these important subjects.

The work includes a description of the part played by enzymes in various industries, such as tea, coffee, cocoa, manufacture the rotting of jute, the preparation of indigo. Finally, the subject of sewage disposal on which the author is so well qualified to speak, is treated in a concise and clear manner. The book fills a very great want amongst the scientific workers generally, and is one that should be found in every bacteriological and chemical laboratory.

Physiology of the Nervous System—By N J VAZIFDAR, L M & S James & Sons, Bombay, 1911

THIS is an admirable abstract or resume of a description of the physiology of the central nervous system and the special senses written by Mr N J Vazifdar of Bombay, for the use of his students in the physiology class. The abstract is based upon well-known text-books of physiology and is accurate and up-to-date in its information. The little book should prove useful to students reading for the Intermediate M.B. & L.M. & S. examinations.

The Medical Diseases of Children—By R MILLER, M.D. (Lond.) Bristol John Wight & Sons, Ltd Price, 12s 6d net

THERE are in existence many excellent books on diseases of children, so it is somewhat daring in a new author bringing out another book. Dr Reginald Miller, late of the Great Ormond Street Hospital and now Physician to out-patients at Paddington Green Children's Hospital, has however succeeded in writing a useful and practical book. The reader will note that the infective processes are classified mainly according to the infecting organism, and the various sections are headed as the pneumococcal infection, the typhoid and allied infection, the rheumatic infection, etc. The section on these infective diseases is particularly good, as are also those on the digestive system and the genito-urinary system.

The book is very completely illustrated, and we believe that in time it will establish itself as a leading book on the medical diseases of childhood.

The British Sanatoria Annual—Messrs John Bale, Sons and Danielsson, a new edition of the *British Sanatoria Annual* for 1911.

THIS is a very useful compilation and gives a large amount of useful information about sanatoria in the United Kingdom. The handsome little volume is divided into three sections, viz., private sanatoria, such as, e.g., the Altadore Sanatorium in Co. Wicklow, the Giampian Sanatorium at Kingussie, the Noidach-in-Wales at Pendyffyn Hall, or the Openau Sanatorium at Bournemouth. Detailed descriptions are given of 37 such sanatoria.

In section II descriptions are given of 64 sanatoria that are free or that take patients at reduced fees or on special terms or conditions, such as the King Edward VII Sanatorium at Midhurst, the Ayishne Sanatorium, or the South Dublin Consumptive Hospitals. Section III describes 19 Homes and Convalescent Institutions, such as the Alton Convalescent Home, the Alan Ryan Home Hospital, Dublin, or St Catherine's Home at Ventnor.

This little annual costs 3s 6d net, and is worthy of being in the library of all medical men in practice.

The Practice of Surgery—By JAMES GREGORY MUMFORD, M.D., Visiting Surgeon to the Massachusetts General Hospital, etc., pages 1015, with 682 illustrations. W. B. Saunders Company, Philadelphia and London, 1910.

THIS book is divided into seven parts, dealing successively with—The abdomen, female organs of generation, genito-urinary organs, the chest, the face and neck, the head and spine, and minor surgery, and diseases of structure. The arrangement of the subject-matter is distinctly novel, but the book is clearly written and the illustrations are excellent. One satisfactory feature is noticeable throughout the book, namely, that important surgical points are first discussed, and not hidden behind a tangle of rare conditions, as is the custom in so many text-books. Thus, in dealing with tumours of the breast, cancer is dealt with first, and not after a dozen or so of much rarer breast tumours.

No claim is made by the author to deal with the whole subject of surgery exhaustively. Surgical conditions of about equal importance in different chapters are dealt with at very different lengths, others of importance, such as tetanus, are not dealt with at all. For these reasons the book is not quite suitable for junior students, but we unhesitatingly recommend it to our readers as an up-to-date surgical work refreshing in its contrast to the stereotyped English surgical textbook.

ANNUAL REPORT

GENERAL HOSPITAL, MADRAS, ANNUAL
REPORT FOR 1910

As usual this report is full of interesting matter. There are 700 beds available and the daily average strength was 423.

We make the following extracts—

"It is difficult to explain the steady fall in the attendance of Europeans out patients which has continued for the last ten years, in 1901 the number who attended was 10,165 as compared with 6,120 last year showing a decrease of 4,045."

The explanation of this fall in the attendance will probably be found in the large increase in the number of civil medical practitioners who have opened small surgeries and dispensaries in different parts of the City. This fact and the general well known unwillingness of the lower class of Europeans to come to hospital except in cases of serious or very sudden illness is the only explanation I can suggest. The cause of the decline in the out patient attendance apparently also affects natives, as in the last ten years the attendance has fallen from 56,332 to 45,870."

"There was an increase of 115 cases of tuberculous diseases treated, as compared with the previous year. Many cases of advanced pulmonary tuberculosis who apply for admission cannot be admitted, as they would constitute a great danger of spreading the disease amongst other inpatients. A special hospital for tuberculous diseases in Madras itself is badly wanted, irrespective of other arrangements at present under consideration, for the more special and extended treatment of these cases. A small hospital in Madras to accommodate about 60 patients would always be full and would act as a feeder for the large special hospital which it is proposed to erect outside Madras."

Septic Cases

	Number admitted	Died
Admitted with sepsis	135	45
Sepsis acquired in hospital	9	1

Operations—The total number of operations performed on inpatients was 2,166 and on out patients 5,013, of which the majority were of a very trivial nature such as opening of abscesses, phlebotomy, extraction of teeth, etc.

The numbers for the last three years amongst inpatients were—

Years	No.	Percentage
		of mortality
1908	2,012	5.33
1909	1,919	8.39
1910	2,166	5.77

We are glad to see the Post Collegiate course is maintained and 14 Sub Assistant Surgeons attended a 6 months' course. This is a highly desirable course and worthy of imitation in other provinces.

The report of Lieutenant Colonel R. Robertson the First Physician, is short and does not admit of extracting. Captain A C Ingram, I M S., gives the Report on the wards of the Second Physician. Of the Malaria cases treated they are classified as follows—Benign tertian 50, Malignant tertian 54, Quartan 6, Mixed 6 and Chronic 29. There were 13 cases, with 4 deaths, of Entertic fever among Europeans and Europeans and the type was severe.

Major H Kirkpatrick, I M S., writes the Report on the Third Physician's wards. He states that there were 253 blood examinations, in which there were 34 cases of Malaria parasites and nine of Kala azu.

We extract the following remarks on *Vaccine Therapy*—

"Treatment by vaccine was tried in several cases with most variable results. Opsonic indices were not recorded."

One case of gonorrhœal arthritis was treated with repeated doses of gonococcal vaccine obtained from Park and Davis in doses of 50,000,000 with great success. The temperature fell to normal within 36 hours of the first injection, whereas all other forms of treatment had previously no effect. The patient, a girl of 15, left the hospital apparently completely cured.

On the other hand another case of acute gonorrhœal arthritis to whom 20,000,000 of gonococcal vaccine obtained from Messrs. Burroughs and Wellcome was administered suffered a severe negative reaction and left hospital 1 day after the injection.

Two other cases chronic of gonorrhœal arthritis, were also treated with vaccine injections combined with Bier's treatment with a certain amount of success, but I am doubtful in what degree the improvement was due to the vaccine treatment.

One case of multiple pustules about the mouth, nose, eyes and ears after malaria was treated with doses of a stock vaccine of *staphylococcus aureus* obtained from the King

Institute at Guindy with great success. Two doses of 20,000,000 at an interval of three days procured a complete cure. The *staphylococcus aureus* had been isolated from the pustules in pure culture.

Two other cases of recurrent boils after enteric fever and pneumonia were also treated with small doses of the same vaccine, *staphylococcus aureus*, with apparent success."

Heart Disease—Twenty eight cases were treated during the year. The majority were affections of the mitral valve, probably due to gonorrhœal rheumatism or syphilis. Several of them improved markedly with Iodide of Potash in large doses. One case of post mortem was found to have an aneurysm of the left ventricle due to gummatus degeneration of the cardiac wall, this woman was mouthed on admission so that accurate diagnosis before death was not possible.

Asthma—Adrenaline injections were tried in several cases of bronchial asthma with variable results. One case showed a very marked improvement within two minutes of the administration of this remedy and was so convinced of its efficacy that whenever she had an attack of asthma she clamored for an immediate injection. She left hospital after 1 week's treatment apparently completely free from asthma. Other cases were not so successful although in the majority of instances an injection of 9 minims procured speedy relief from immediate symptoms. The relief sometimes lasted only half an hour."

Abcess of the Liver—A young married woman was admitted on the 1st September after she had attempted to commit suicide by throwing herself into the Cooum. She complained of severe constant pain in the pit of the stomach. This pain had existed ten months with slight intermissions. She was a well nourished and somewhat anemic young woman. She had very irregular remittent fever and there was extreme tenderness in the epigastrium just to the right of the midline. Her blood was sent to the King Institute at Guindy who reported strong positive Widal reaction 1 in 93. There was also a slight leucocytosis. In consultation with Captain A Chalmers, I M S., the Second Surgeon, it was decided to operate, at the operation a small abscess was found in the right lobe of the liver, from which a living round worm 11 inches long was withdrawn. Her subsequent uneventful recovery is recorded in the report of the Second Surgeon. The Hospital Ayahs described the worm as a snake which the patient had swallowed during the temporary sojourn in the Cooum.

Ankylostomiasis—Thymol has given most irregular results as an expeller of Ankylostomes. One case exemplified this extremely well, the first dose expelled over 80 worms, but the second a week later gave no result at all, while a third dose 10 days later expelled 90 worms. In each instance the same routine was followed. One and a half drachms of thymol in two doses at an interval of two hours being given in the morning preceded and followed by a purgative.

Diphtheria—A Muhammadan girl with paralysis of the soft palate was admitted in November 1910, who gave a history of a sore throat one month before. I have little doubt that this was a case of post diphtheritic paralysis, although a culture from the fauces gave negative result.

I record this case on account of the rarity of diphtheria in Madras especially so early in the year as October.

Major P C Gibbett and Major W J Niblock, I M S., were in charge of the First Surgeon's wards. Major Niblock reports many cases of great surgical interest.

"*Abdominal Sections* (excluding operations for hernia and hepatic abscess)—55 with six deaths.

The most interesting were—

(a) *Posterior gasticojejunostomy*—Seven operations (Hindus 5, Muhammadans 2), with 6 successful recoveries and one death.

With one exception all were for chronic ulceration at the pyloric end of the stomach with dilatation of that organ. All the patients were emaciated and unable to retain food in the stomach.

There was one case of acute ulceration with profuse haematemesis. Here a more or less circular ulcer over two inches in diameter was discovered on the anterior surface of the stomach. Improvement set in rapidly after the operation and he left the hospital feeling quite well.

In an eighth case the patient suffered from dilatation of the stomach with extensive adhesions round the pylorus. As the patient took chloroform very badly, and was in an exceedingly low state gastric enterostomy was not performed and I contented myself with separation of the adhesions. The patient left hospital much relieved but will probably require gastrojejunostomy later.

(b) *Carcinoma of the Stomach*—Exploratory laparotomy was performed in four cases of carcinoma of the stomach (one European and three Hindus). In all of these the lesser curvature of the stomach was affected, with secondary involvement of the surrounding structures (the pancreas being implicated in two).

In a fifth case, in a Hindu, the carcinoma apparently began in the left lobe of the liver with secondary invasion of the stomach and adjacent organs."

In all the cases removal of the growth was impossible
All healed by first intention

There were also two good cases of modified Cushing's operation for Trigeminal Neuralgia, one with good results and one died suddenly

The following cases are interesting —

"Sub phrenic Abscess" —A large abscess the result of a perforated duodenal ulcer. The abscess was opened up and drained. The patient died six months later from exhaustion.

Appendicitis —Twelve operations. Eight were cases of recurrent or relapsing appendicitis in all of which appendicectomy was performed. Four were cases of appendiculitis abscess in only one of which the appendix could be removed. All the patients recovered. Six were orthodox Hindus, four Europeans, and two Eurasians.

One appendicostomy was successfully performed for ulcerated colon.

Tubercular disease of the Cæcum, etc. —A Hindu female, aged 29, with a history of the trouble commencing three months ago, the first thing noticed being that she was getting thin and weak. A medical practitioner whom she then consulted told her that she had a swelling in the right side of the abdomen. Ever since the beginning of her illness she had suffered from diarrhoea — at least three or four motions daily. On admission to hospital she was much emaciated and had a distinct swelling in the right iliac region.

Operation —On 1st June, cæcum exposed. After some omentum and other adhesions had been separated it was seen to be much diseased and larger than the size of a man's closed fist. Appendix welded into the solid mass. The cæcum, with the lower two inches of the ileum and upper three inches of the colon, was excised, together with the right tube and ovary which were firmly adherent to the mass. Lateral anastomosis was performed. The after progress of the case was most satisfactory — the bowels opened naturally on the second day and two weeks later the motions became semi-solid and regular. The wound healed by first intention and the patient was discharged, feeling quite fit, on the 9th July.

Laceration of Spleen—Splenectomy—Recovery —A Hindu girl, aged six, was admitted to the hospital on the 5th June with a history of having been run over by a bullock cart on that morning. The case was seen by me, for the first time on the next morning, about twenty-four hours after the accident had taken place.

The patient was then in a condition of shock, abdomen distended, no rigidity anywhere specially noticeable, liver dulness absent. She was removed at once to the operation theatre and the abdomen was opened to the left of the middle line. The intestines were seen to be distended and filled with round worms. Blood in large quantity welled up from the peritoneal cavity. The spleen was at once looked for, found to be lying in a pool of blood, and to be torn in several pieces which were almost entirely separated from one another. The pedicle of the spleen and two or three other bleeding vessels were ligatured and the spleen removed in pieces. The spleen was enlarged to more than twice the normal size and was evidently a matured spleen in a fairly early stage. The small intestine in the neighbourhood was bisected in a few places but not lacerated. The patient's recovery was rapid and uneventful.

Abscess containing round worms —A Hindu girl, aged 12, was admitted suffering from an abscess in the right ilio-lumbar region. As soon as the abscess was opened two large round worms wriggled out of the wound. There was nothing to point to intestinal trouble nor was there any smell indicating *Escherichia coli* infection. The abscess healed up without trouble.

Hermaphrodite —This patient was a Hindu, aged 18, had been brought up as a woman and had been admitted to the female wards for a painful tumour in the right labium majus. The patient's general development was good, midway between that of a man and a woman. No hair on pubes or upper lip. Breasts moderately developed. Genital organs — clitoris about one and a half inches in length and the thickness of a man's finger, labia majora and minora of normal shape, but the vagina was a little over one inch in length and a quarter inch in diameter. Menses occurring of the female type and opening in the normal situation. No uterus to be detected, but a cord, the thickness of a lead pencil, could be felt running upwards, and to the right, from the vagina. The swelling in the right labium proved to be a hydrocoele of the tunica vaginalis the size of a lime. The testicle was about a quarter of an inch in length with no epididymis but with what looked like a Fallopian tube loosely attached to it. Subsequent examination by the pathologist confirmed this. A testicle was present on the left side also, situated in the labium majus. This presented all the characters of a rather imperfectly developed testis. The patient had never cohabited and preferred to be considered a woman.

Captain A Chalmers, I.M.S., reports on the work in the Second Surgeon's wards —

The following are the important cases treated —

<i>Hernia</i>	{ Inguinal 18 cases were operated on, all cured
	{ Ventral 3 cured

<i>Hydrocoele</i>	11 cases were operated, all cured
<i>Hamatocele</i>	1 remaining

<i>Impitulations</i> 23	{ For injury 10
	{ Upper extremity 6 5 cured, 1 relieved
	{ Lower extremity 4 3 cured, 1 died

<i>For disease or deformity</i> 13	{ For injury 9 7 cured
	{ Lower extremity 4 4 cured

Elephantiasis scrotum 1 cured

Suprapubic lithotomy for Vesical calculus 1 cured

Ampullation of penis for carcinoma, 1 cured

Colotomy —1 died Operated on for imperforate anus, no rectum, but an anus of 1 inch length

Carcinoma breast —4 cases were operated on, 3 cured and 1 was discharged otherwise

Ovariotomy —2 cases were operated on, 1 cured and 1 died. The case that died was a very large cyst containing 512 ounces, did well till fourth day when she died suddenly from pulmonary embolism.

Removal of Adenoids —10 all cured

Empyema —2 1 cured and 1 died

Imperforate anus —Plastic operation, 3 cases were operated on, all cured

Epithelioma lip —2 cases were operated on, 1 cured and 1 remaining

Sarcoma lower jaw —3 cases were operated on, 2 cured and 1 relieved

Epithelioma lower jaw —1 case was operated on, cured

Carcinoma cheek —1 case was operated on, cured

Carcinoma tongue —1 case was operated on, discharged otherwise

Liver abscess —Due to presence of female round worm in the substance of the liver — abdomen opened and a small piece of yellow necrotic liver tissue was found on anterior surface of liver. This was incised and a round worm appeared at the bottom of the small incision. It was removed alive and was full of ova. Recovery uneventful. This patient, a woman of 18 years, had attempted suicide on account of the severity of the pain.

Captain L Hirsch, I.M.S., writes thus of the work in Third Surgeon's wards —

Hernia —There were 44 operations for hernia. In three of these a filigree made of silver wire was placed. They were cases in which the ring was very large and abdominal wall thin and weak. The filigrees were not intended to prevent recurrence of hernia by any rigidity of their own but rather to afford a firm skeleton for the formation of fibrous tissue.

Strangulated Hernia —There were 13 operations for this, 10 cured and 3 died. Of the 3 deaths, in one the gut was gangrenous and patient admitted in a moribund condition; in another, patient was suffering from Chronic Bright's disease, and the third died of shock.

Carcinoma Penis —12 operations, in 10 of which complete amputation was performed, and partial in 2 early cases.

Laparotomy for Intestinal Obstruction —5 operations 1 cured and 4 died. Of the 4 deaths, 3 were admitted moribund and 1 in which there was volvulus, died of toxæmia.

Gastro-enterostomy —4 operations, 1 for gastric ulcer and 3 for dilatation of stomach. All these did well and were completely free from all gastric troubles.

Omentopexy —3 operations were performed for cirrhosis liver with ascites.

Aneurysm of Brachial Artery —1 cured was a typical aneurysm situated at the bend of elbow and about the size of a mango split in two. Brachial artery was tied in the middle of upper arm. Swelling at once disappeared, no evidence of pulsation was present in it when he left the hospital.

Aneurysm of Abdominal Aorta —1 died. Insertion of wire was done in this case. On opening the abdomen a very much larger aneurysm than was suspected was found. Transverse colon was pushed up and mesenteric stretched and thinned over sic. Forty-five feet of wire was inserted. Patient died the day after operation from acute intestinal obstruction due to the duodenum being nipped by a band passing upwards, backwards, and to the right from the sic. This was not seen at the time of the operation. After the insertion of the wire, pulsation almost ceased and the pain which was very acute entirely subsided.

We extract the following from the Report of Major H Kirkpatrick, I.M.S., on the Post mortem work of the Hospital —

"Status Lymphaticus, 15 —Cases showed considerable enlargement of the thymus gland together with more or less

hyperplasia of the lymphatic tissues. In no case did this condition appear to contribute to the causation of death. The oldest case was a Hindu aged 45—the youngest, a youth of 15. It is curious that in six cases out of the 15, death was due to injury. In view of the common occurrence of this condition in Madras I am beginning to feel some doubt of the importance of this condition.

Hydrocephalus—Three cases were examined and in every case Negri bodies were found in the brain without difficulty, and the findings were confirmed by the Director of the Pasteur Institute, Coonoor.

Gallstones—I have tabulated a further 198 cases who were examined for gallstones. In five cases only gallstones were found. The total percentage for the 432 cases tabulated during the last two years is only 3.24. The stones found in every case were Bilirubin calcium Cholesterin stones. No gallstones were found.

from 8.1 per cent to 6.7 per cent in 1910. There were 42 deaths in the year of report against 49 in the previous year. One European died in the Rangoon Asylum of general paralysis of the insane. Deaths from phthisis were only two as against eleven in 1909. There were two unnatural deaths in Rangoon—one criminal lunatic committed suicide by hanging himself in his cell and in Minbu a criminal lunatic died of carbolic acid poisoning. In Rangoon nasal feeding was required for 30 cases against 31 in 1909, the average number of days per patient being 13.4 against 16 in 1909. In one case it was required for 58 days."

Staff—Captain W. S. J. Shaw, I.M.S., held charge of the Lunatic Asylum, Rangoon, and Dr. Wells, of the Minbu Asylum throughout the year. Both officers conducted their duties with special care in the interests of the patients, and under unsatisfactory conditions in reference to the unsuitability and insufficiency of accommodation.

Table of Ages

Total number 1909 and 1910 together	0 to 20	20 to 30	30 to 40	40 to 50	50 and upwards
Females	111	28 (One Gallstone case)	27 (One Gallstone case)	23 (Three Gallstone cases)	17 (One Gallstone case)
Males	321	60	75 (One Gallstone case)	75 (Two Gallstone cases)	62 (Three Gallstone cases)
Total	432				49 (Three Gallstone cases)

Worms—I have tabulated 196 cases especially examined for the presence of worms—of these 15 were Europeans and 181 Natives. In only nine were no worms found—six of these were natives and three Europeans.

Ankylostomes were found in 51 per cent.

Whip worms were found in 64 per cent.

Round worms were found in 50 per cent.

Thread worms were found in 31 per cent.

Ten cases showed all four varieties of worms.

My figures do not include six children under one year of age who had no intestinal parasites. The opinion that was expressed last year as to some immunity to ankylostomes being developed above the age of 40 is not confirmed by the figures.

Cysticercus Cellulorum—One case was found post mortem with multiple cysts of this parasite in all parts of the body. The cysts were very numerous in the brain and death was apparently due to them. The cysts were well developed and contained embryos of taenia solium. I can find no previous records of this condition in the post mortem book.

Hydatid—Multiple visceral infection with cysts in the spleen and liver was found in one case.

Amyloid Disease—Advanced extensive amyloid degeneration of the kidneys, liver and spleen was found in one male Hindu aged 35. The condition was probably due to syphilis.

Primary Cancer of Liver—One case of primary carcinoma of the liver was found in a Hindu male, aged 22. There were numerous cancerous foci, one of which had grown by direct extension into the gall bladder, was distended by a mass of cancerous cells and blood."

ASYLUMS

I.—BURMA, 1910

THE 1911 Census reckons the population of Burma at 12,057,905 persons or a marked increase of over 14 per cent over the figure of the Census of 1901, yet out of this large number there were only an average of 641 lunatics under confinement in this large province of the Empire. The Minbu Asylum for criminal lunatics only has only accommodation for 141 males calculated at the very small area of 36 sq. feet per patient. The Rangoon Asylum had its accommodation increased up to 516 by the erection of new buildings, but in spite of this the asylums were overcrowded and Burma has before it the same problem as Bengal, that is, the building of a new and up to date asylum.

No one believes that out of over 12 millions people there are only 611 lunatics who need treatment in an asylum, and it is well to remember that no Government of a civilised country has got off so cheaply as that of India in the matter of provision for the insane. We quote as follows from Colonel Cariuthers' Report—

Sickness or mortality—The health of the inmates was on the whole good there being no epidemic disease during the year. While the daily average sick in hospital increased from 20.61 in 1909 to 27.08 in 1910, the percentage of "Cured" rose from 7.44 in 1909 to 10.52 in 1910 and the mortality fell

During the year, the conditions of service of the Native keeper staff have been improved by their service being graded "Superior" instead of "Inferior."

II.—PUNJAB LUNATIC ASYLUM

WITH a population of nearly 20 millions there were about 636 in the asylum in the Punjab in 1910, a fact which forcibly illustrates the very small relative expense to the community of lunatics in that province. To these 636 are to be added 181 admitted during the year and 202 discharged, leaving only 615. Statement VI of the Annual Report, written by Colonel Bambei, I.M.S., the Inspector General of Civil Hospitals, Punjab, gives the types of insanity of the lunatics in confinement during the year. Of the total treated there were 52 idiots, 66 were epileptic mania cases, and 375 other forms of mania, acute and chronic there were 26 cases of epileptic melancholia and 182 other forms of melancholia, five cases of epileptic dementia and 72 of other forms of dementia, 4 cases of mental stupor, no cases of general palsy, 23 cases of delusional insanity and 11 other cases recovered or not yet diagnosed.

Of the alleged causes of insanity we find 84 attributed to charas smoking, 32 to bhang, 1 to opium smoking, madak and chandu, 7 to opium eating, 31 to spirit-drinking, 20 to opium, charas and bhang, 22 to fever, 7 exposure to heat, 26 congenital 85 to epilepsy 8 to overstudy and 10 women after childbirth. It is worth notice that no female cases were attributed to charas, gajra, bhang or opium, madak and chandu or to opium eating and only one female to spirit drinking. It is also noteworthy that no cases were attributed to ganja smoking.

The proportion of male keepers excluding a couple of Jemadars was 1 to 8.2 males and 1 to 31 female lunatics.

Diphtheria, dysentery and ankylostomiasis (the latter due to mud eating habits) were the chief diseases. We look forward with interest to Major W. C. H. Forster's report on bowel complaints in the asylum which has not yet been published.

Colonel Bambei concludes his report as follows—

"Great difficulty continues to be experienced in obtaining suitable men as attendants, and though the pay is good and the men have many minor advantages, it has not been possible to attract individuals of a higher standard. pensioned soldiers in particular refuse to enter the service and as stated in the note on the previous year's statistics, this is probably due to the duties of asylum attendants being extremely distasteful.

Owing to the great success which has attended the introduction of the Franciscan Sisters in the female asylum, repeated attempts have been made to secure the services of the members of some religious body for the male portion of the asylum but, so far, without success.

Captain A. S. M. Peebles, I.M.S., officiated as Superintendent of the Asylum from the beginning of the year up to the 10th of October, when Major G. F. W. Evans, I.M.S., the permanent incumbent, returned from furlough and resumed charge."

III.—E. B. AND ASSAM ASYLUMS

Lieutenant Colonel Hall, I.M.S., held charge of the Dacca Asylum and Major H. S. Wood, I.M.S., of the Tezpur Asylum.

There were 524 lunatics (duly average strength), and of these 148 were admissions or readmissions that is only over 500 lunatics in confinement out of over 151 million inhabitants of the province. Of the admissions 40 per cent were criminal lunatics.

Of the remaining on 31st December there were 7 idiots, 24 epileptic mania, 283 other forms of mania, 149 melancholics, and 4 epileptic melancholics, 9 dementia, 9 delusional insanity and 32 "not yet diagnosed" out of 318 lunatics.

The "alleged causes" are given as follows —

63 ganja smoking, 3 opium eating 10 spirit drinking, 13 "fever," 23 epilepsy, 1 puerperal, 1 congenital, 37 hereditary, 1 overstudy, 1 injury to head of 153 total "physical" causes and 63 "moral" causes.

The following remarks are taken from Colonel Campbell's report —

"The number of admissions to hospital was greater than in 1909 (154 against 132) in the Tezpur and smaller (148 against 183) in the Dacca Asylum. The number of daily average sick in both asylums was 33.77 against 33.96 in the previous year. The percentage of deaths to daily average strength was much less at Dacca, but little more at Tezpur. At Dacca, there were 42 deaths against 51 in 1909, and at Tezpur 20 against 18. The chief causes of deaths in the Dacca Asylum were exhaustion of mania (8), dysentery (7), diarrhoea (7), anaemia (6), tubercle (5), and fever (3). The deaths from exhaustion were due to patients arriving in a bad state of health and persistently refusing food and treatment. Five cases died within a month and 2 cases within 2 months and 8 days of their admission into the asylum. One lunatic who died during the year was an inmate of the asylum for nearly 28 years. More than half the number of deaths in the Tezpur Asylum (12) were due to tubercular diseases, viz., 10 died of tubercle of the lungs, 1 of tubercle of the intestines and 1 of tubercular meningitis. All possible efforts were made to combat the disease and to arrest its spread by keeping all suspicious and real cases of tubercle in a well ventilated isolated shed, the floors and walls of which were regularly treated with perchloride of mercury and cyllin. I agree with the Superintendent who attributes the increase in tubercle to over crowding and the absence of a separate tubercle ward. Administrative sanction has been accorded to the construction of a Tubercle ward and some other improvements, funds for which will be provided by the Public Works Department in 1911-1912. Until this Tubercle ward is constructed and the accommodation is increased, no improvement in the present state of affairs can be expected. I consider it extremely undesirable that incipient and advanced cases of tubercle should be kept in one ward as at present. All tubercle cases should be strictly isolated from the healthy and cases in the early stage treated apart from those in advanced stages. It is satisfactory to observe that at Dacca, where a separate Tubercle ward has been provided there were only 5 deaths from this cause during the year against 11 in 1909, but it is impossible to isolate tubercle cases properly even there."

At Dacca there were 5 cases of injuries and accidents, viz., 2 fractures and 3 wounds. One fracture was due to an accidental fall and the other case was a lunatic received into the asylum with a broken arm. One wound was self inflicted and the other two were caused by other lunatics. None of these proved fatal. No cases are reported from the Tezpur Asylum.

The ratios of deaths per cent of average strength amongst the inmates of the asylums in the different Provinces of India in 1910 were as follow —

1	Central Provinces	20.48
2	Punjab	14.08
3	Bombay	12.80
4	Eastern Bengal and Assam	11.81
5	Madras	11.06
6	United Provinces	7.26
7	Burma	6.70
8	Bengal	6.58

The Superintendents of the Asylums at Dacca and Tezpur and the Central Jail at Dacca were requested to inquire into the prevalence of tubercle in their asylums and in the Dacca Central Jail. Their reports show that tubercle is more prevalent in Lunatic Asylums than in jails or among the public generally, and this is chiefly due to exposure and privation before admission and to the difficulty of carrying out rules of prevention, such as the prevention of expectorating in wards, the disinfection and destruction of tubercular sputum, etc., after admission to the asylums, there are very few instances that do not show signs of chronic lung mischief when autopsies are made. I drew up a set of rules as to the precautions that should be taken to lessen the incidence of the disease, a copy of which was forwarded to each of the Superintendents of the Lunatic Asylums at Dacca and Tezpur and to the Superintendent of the Dacca Central Jail."

CHEMICAL EXAMINER'S REPORT, PUNJAB

MAJOR J A BLACK, I M S, submitted the report, he having taken over the work of the department from Colonel D J Giant in November 1910. The new Laboratory was satisfactory, but the medico legal work is still carried on "under unpleasant conditions in a confined area," but it is hoped to remedy it to a certain extent. The number of cases examined, continues to increase, there were 1,632 cases examined, of which 532 were of "human poisoning" including 11 abortion cases, 106 cases of cattle poisoning, 534 "stain cases," 81 rape cases, 55 of unnatural offence (See 377, I P C). The percentage of detection in human poisoning cases was 74 per cent of the human cases in which poison was detected, 34 per cent were arsenic cases, opium 27 per cent, both arsenic and opium in 105 cases, datura 10 per cent, mercury 5 per cent, alcohol 4 per cent, and aconite 2 per cent. Major Black considers that the restrictions placed upon the sale of arsenic is having good results.

Of the "stain cases" examined there were no less 1,008 cases of blood found on the articles a fact which shows the need for the establishment of a special Laboratory for the biological blood test.

For purity and quality 455 articles were examined, chiefly water, excise articles and samples of cocaine.

CHEMICAL EXAMINER'S REPORT, BENGAL, FOR 1910

This report was sent in on 30th January, and the report issued by the middle of May.

There were several changes of Chemical Examiners during the year, viz., Major Black, Capt. Emslie Smith, Capt. Owens and from 28th October Major F N Windsor, B Sc., who writes the report.

We are glad to see that an allowance of Rs 50, Rs 10—150 has been given to Junior Assistant Surgeons in this department.

The work is ever increasing.

We append some notes on poisoning cases and contributed by Assistant Surgeon Rui C P Bose, Bahadur, which are of general interest —

A case of Robbery by Drugging —A case occurred in Calcutta in which the accused, who was a dandy in a cargo boat, went over, on the night of the 9th September 1910, to another boat and seated himself alongside the fire place where the food of the crew of the second boat was being cooked. Before he came to this boat, he was seen powdering some seeds like chilli seeds on a curry stone. The crew fell sick during the night after partaking of their food, and some of them jumped overboard and the body of one was never recovered. The accused disappeared with some currency notes belonging to the victims which were subsequently found on his person when he was arrested by the police. All the victims (excepting one who was believed to have been drowned) were removed to the Mayo Hospital, where they were found suffering from symptoms of *datura* poisoning. The police sent for chemical examination some cooking pots in which the food was cooked for the crew on the night of the occurrence and atropine was detected in some cooked dal contained in one of them. The man was convicted at the last High Court Sessions.

Poisoning by Aconite —The Assistant Surgeon of Jamalpur referred the following case of aconite poisoning with the history that the deceased, a Muhammadan woman, took some cooked dal given to her by a neighbour, with rice cooked by herself. She became ill after taking the food, complained of numbness of the extremities, vomited and died within a few hours. Her son also partook of the same meal, became very ill but recovered under treatment. There were patches of congestion in the stomach of the woman, and the intestines contained liquid yellow faces. The lungs, the liver, the spleen the membranes of the brain and the brain substance were congested. No aconite was detected in the stomach of the deceased, but aconite was detected in the vomited matter of the woman, which was also forwarded for examination, as well as in the washings of the stomach of her son who recovered under treatment. The motive for the administration of aconite was not mentioned in the history of the case.

Strychnine Poisoning —The Civil Surgeon of Howrah forwarded the viscera of a European Sergeant of the Government Railway Police, Howrah, with the history that he drank some brandy from a phial brought to him by a coolie who could not afterwards be traced, and immediately cried out that he had been poisoned and became ill. He was taken to the hospital where he died shortly after. He had fits before death. The viscera on examination were found to contain strychnine. The phial from which the brandy was drunk and which was recovered from the house was also forwarded for examination. It contained a few drops of brandy in which strychnine was detected.

Yellow Oleander Poisoning —Yellow oleander is largely used in Orissa as a poison for committing suicide, but such use is very uncommon in Calcutta. The following is a short history of a case of oleander poisoning that happened in Calcutta during the year under report.

The dead body of a woman, aged about 20 years, was carried to the burning ghat for cremation, where she was reported to have died of cholera. The Registrar of the Burning Ghat on examination of the body thought it was not a case of cholera. He stopped cremation, sent information to the police who removed the body to the morgue for post mortem examination. The Police Surgeon of Calcutta who made the autopsy suspected poisoning but could not give a definite opinion and he sent the viscera for chemical examination. Yellow oleander in marked quantity was detected in the viscera. There was a history of pain in the stomach, vomiting and purging before death, which are usually present in cases of poisoning by oleander.

Poisoning by Arsenic —A case of poisoning by Scheele's green was referred by the Colonel of Calcutta in May 1910. The viscera of a Muhammadan woman were sent for examination with the history that after a quarrel with her husband who assaulted her in consequence, she took some green paint kept in the house by the husband (who was a painter), which caused her to vomit and purge and she died in five or six hours. The mucous membrane of the oesophagus was whitened and friable, that of the stomach was blistered and congested, and there were greenish patches on it, the duodenum was congested. The intestinal tract was empty. Arsenic was detected in the viscera and arsenite of copper in some stains of vomited matter on the clothes of the woman, as well as in the box in which the paint was kept by the husband.

Poisoning by Salicylic Acid —A case of poisoning by salicylic acid was referred by the Civil Surgeon of Cooch Behar. The deceased, after taking his evening meal, vomited, had several loose stools and died. The post mortem examination revealed subconjunctival haemorrhage in the left eye ball, the heart was empty on both sides, patches of congestion of the mucous membrane of the stomach were present and the stomach was empty. The mucous membrane of the small intestines was highly congested and they contained bloody fluid. The large intestine was empty. There was enlargement of the spleen. The stomach and portions of liver and kidney were forwarded to this department for examination and salicylic acid was detected in them.

Borax sold for Sugar candy —The practice of keeping in ordinary grocery shops medicinal and poisonous drugs along with food stuffs for sale is open to grave objection, as will be seen from the history of the following case. The Sub divisional Officer of Kuriagram forwarded for examination a lump of white crystalline substance which was sold as sugar candy by a shop keeper and which was given to a child as such and made him ill. The substance was found to be borax.

Betel poisoning scare —In connection with the pan poison scare which prevailed widely in Calcutta and throughout West and East Bengal during the rains last year, a large number of prepared betels and good many samples of betel leaves were received for examination from Calcutta, Howrah, Rangpur, Backergunge, Naiail and Ghatia. Stomach washings of cases of alleged pan poisoning as well as the viscera in one case were also received for examination. The usual symptoms in such cases were some kind of irritation in the mouth, burning sensation in the throat, giddiness, nausea followed in some cases by faintness and insensibility. The fatal case of alleged pan poisoning was found to be a case of opium poisoning. No poison was detected in the exhibits forwarded in connection with any of the other cases. The betel leaves were found to be free from all deleterious substances but the betelnuts sent from Backergunge were found to possess narcotic irritant properties which many unique varieties of betelnuts generally possess. In one of the prepared betels a living centipede was found. Decomposed betel leaves showed the presence of living worms (nematode class). The question was thoroughly investigated and reported upon by a Commission appointed by the Government of Bengal.

Fungus in Paddy —The Civil Surgeon of Nadia forwarded a quantity of paddy with black discolouration, stating that rice obtained from the same was eaten by three persons who developed signs of dry gangrene and two of them died in consequence. The same paddy which had not undergone the discolouration was used by other people who were not affected.

The paddy was forwarded to the Professor of Pathology and Bacteriologist to the Government of Bengal Medical College, with a request that the same might be examined for ergot or any other fungoid growth that might give rise to symptoms described above, and the following report was received —

"Some preparation of black grains contained in the sample showed numerous chains of spores of a fungus, the yellow

grains showing no fungus. Section of the black ones showed a fine mycelium containing black spores in the lumen between the husk and aleurone layer. Cultivation result negative."

An adult healthy cat was daily fed in this department with the rice obtained from the blackened paddy for about a month and kept under observation for several months, but the animal did not develop any symptoms of disease.

CIVIL HOSPITAL SECUNDERABAD

This report for the year 1910 is submitted by Capt A G Coullie, M.B., F.R.C.S. (Ed.) the Medical Officer in charge, who acted since 4th April 1910, for Major J L Blenkinsop, M.B., F.R.C.S.

The out patient department showed an increase of attendances, the average daily attendance being 223, and there is a steady increase in the admissions to the maternity "Lady Curzon Ward" and the Gynaecological wards.

The accommodation is insufficient in many respects, the contagious diseases and tuberculosis cases certainly need better accommodation, and the out patient department is quite inadequate for the large numbers attending daily.

It is satisfactory to see that in the Resident's resolution on the report it is stated that the funds subscribed as a memorial to King Edward will be devoted to either a new hospital or the great improvement of the old one.

The major operations are increasing in number and with a marked reduction in mortality. Among the 216 major operations we find 18 abdominal sections 3 only being for appendicitis, 18 operations on bone and joints, 6 amputations, 5 stone operations, 11 hernia, 2 elephantiasis, 22 hydroceles, 6 liver abscess, 5 cataracts, 29 obstetric operations, etc.

The success of the Lady Curzon Maternity ward is indeed very satisfactory, 241 women were confined in this ward in the year, and 187 cases admitted to the Gynaecological ward under the care of Mrs. Walker.

As has been found elsewhere in India, there is a growing tendency for better class patients to use the paying wards, a fact beneficial to all except to the medical men.

We note that the Government Resolution congratulates Capt Coullie, M.B., for the reputation he has won in the management of this hospital and the report is a proof of the good work done there.

LUNATIC ASYLUMS, BENGAL

LIKE all other provinces in India, Bengal has accommodation for a very small number of lunatics when compared with its population. The accommodation is under 1,000 for a population of over 52½ millions. No wonder we have said that Indian provinces get off remarkably cheaply in the matter of looking after lunatics. In our May issue we published a description of a single new asylum near Vienna with accommodation for no less than 3,300 lunatics, yet the population of Austria and Hungary together is only about 48 millions, and thus new hospital is for the insane of lower Austria only. It is not to be imagined that there are not many more lunatics in Bengal, there are dozens of lunatics in every district, but they are tolerated by the inhabitants, and they are not accustomed to look for medical aid, and if they did, there would not be room for them.

The demand for more accommodation is steadily growing and will grow with the provision of more and better asylums.

Colonel Harris, who has had much experience of lunatic asylums in India, is fully aware of the urgent necessities for providing more asylum accommodation in Bengal. The Central Asylum at Berhampur is built on a hopelessly bad plan, it is badly situated in the heart of the residential portion of Berhampur and close by the large college. It is not possible to enlarge it without encroaching upon the public madras and seriously interfering with the amenities of life in the private residences of officials and others close by. Colonel Harris writes as follows —

"The total daily average strength during 1910 was 651 34, and the greatest number under confinement in any one night was 671, so that the asylum population was largely in excess of the capacity which has been a matter of grave anxiety to the Superintendent and myself throughout the year. The overcrowding has been chiefly on the male side of the Asylum, and if it goes on increasing as it is doing, the consequences must be serious. The suggestion to enlarge the Berhampur Asylum was negatively on the grounds that it would be economically inexpedient to do so, and the scheme for the establishment of a central lunatic asylum at Ranchi, which had been in abeyance for want of funds, was reconsidered in the light of a modified scheme at a smaller cost. This was decided upon and construction work at Ranchi is to be taken in hand as soon as possible.

The small European Asylum at Bhawanipur is also over crowded during the year under report, mainly in the pauper section. Some of the pauper lunatics had consequently to be confined in the paying wards, and these were transferred to

Berhampur There is a greater demand for accommodation at Bhawampur than is available, and here also the question of providing increased accommodation is a very pressing one. This matter is now under consideration. At the Patna Lunatic Asylum also, which is a very old and out of date institution, there was overcrowding occasionally especially in the criminal ward, but it is not so serious here as at Berhampur and Calcutta."

A magnificent scheme for an up to date hospital for the insane is designed to be built at Ranchi and was described in these pages in 1907 (*I M G*, May 1907, p 181) and this scheme in a reduced and modified form is now to the front, and it is expected that work will begin during the current year.

Another matter of importance is the urgent need of a reception ward or wards in one of the Calcutta hospitals for the early treatment and diagnosis of mental cases and especially of non criminal cases. We gather from Statements I and II of this report that out of a daily average strength of 926 lunatics 365 were criminal lunatics and the rest non criminal. Now, no one will pretend that it is satisfactory that a number of these non criminal lunatics should be kept in a jail cell during the necessary period of observation. It may be necessary to confine such unfortunate in a jail in the mofussil, because no other place for their safe custody exists, but that such should be necessary in Calcutta is not creditable to the second largest city in the British Empire. We therefore note with satisfaction that "a small asylum or ward for acute cases of nervous breakdown among Europeans and Eurasians" is to be built in Calcutta. So far so good, but matters cannot be said to be satisfactory so long as it is necessary to keep non criminal lunatics in a jail for medical observation.

The rate of mortality in Bengal Asylums in the healthy year 1910 was satisfactory, being 65 per mille and lower than that of any other Province in India. We note that the asylum death rate in England is 99 per mille.

The following extract is of interest.—

Amongst the number admitted (190) mania was, as usual the chief form of lunacy, there having been 111 cases, or 58.42 per cent, against 118 and 60.20 per cent in 1909. The number of recoveries from this type of insanity was 49 against 45 in the previous year. Melancholia furnished 36 cases or 18.95 per cent against 46 and 23.47 in 1909, the number of recoveries being 16 and 19 respectively. Under the head of delusional insanity now called Pianonia, there were 10 admissions against 8 in 1909. Dementia accounted for 9 admissions without a recovery in 1910 against 1 cured in 1909. There was only one case of general paralysis of the insane at Patna. The Superintendent says that the patient was addicted to ganja, but this addition to ganja may have been a result of the general paralysis not necessarily its cause. It is lamentably frequently met with in Europe and, I believe, also in America but fortunately is a rare type of nervous disease in India. I have had a considerable experience of insanity in India, and in over 30 years have only seen 3 genuine cases—a Hindu, a Cabuli and an Armenian. The statement on which these statistics are presented was prescribed by the Government of India. It seems to require revision in view of the adoption of the new Nomenclature of Diseases, 4th edition, 1906.

Of the 190 admissions 94 or 49.47 per cent were attributed to physical causes and 14 or 7.37 per cent to moral causes while in 43.16 per cent of the cases the cause of lunacy was unknown. In 10 cases the mental derangement was attributed to heredity, in 35 to abuse of ganja, in 1 to opium smoking, in 2 to indulgence in bhang in 4 to intemperance in drink and in 1 to other intoxicants. Ganja cases were diagnosed by their clinical characters the admission of the patients themselves, and by reference to their relatives. The form of medical history sheets in which these particulars were hitherto supplied has now been replaced by a new form designated descriptive roll of lunatics. Government has also directed that Magisterial Officers should supply the Superintendent of an Asylum with copies of the Court order of judgment and the police reports bearing on criminal lunatics committed to Asylums."

Colonel Harris's report is an interesting one, and we can heartily endorse the good opinion recorded by him of the work the various Superintendents and Deputies who have contrived to produce such good results out of such unpromising material.

THE BOMBAY HEALTH OFFICERS REPORT, 1910

This report for 1910 is submitted by Dr J A Turner, M.B., D.P.H., the Executive Health Officer of Bombay. It is a very complete and valuable report and the only fault we have to find with it is that it contains such a mass of interesting matter that we can only deal with a very few points.

We commend the report to the attention of all medical officers of health in India, the charts and tables are very

complete and graphic. The account given of the difficulties of the Health Department in the control of the epidemic of small pox is very interesting. The great share taken in introducing foci of small pox by returning pilgrim ships from the Hedjaz is commented upon, and it is very satisfactory to see that the unprecedented demand for vaccinations and lymph was successfully met with.

Our readers will remember the report of Dr Bentley on malaria in Bombay city, no time was lost in grappling with this pest on the lines suggested by Dr Bentley, but unfortunately great difficulty was caused by the objections, on vague religious or other grounds, on the part of owners of wells, and as a result anti-malarial work of this kind was stopped by order of the standing committee, although, as Dr Turner says, "in no case was there any attempt to interfere with the sentiments or habits of the owners or occupiers of premises where infected wells or cisterns existed."

It is very disappointing to find the citizens of a city like Bombay so backward and unappreciative of the efforts made solely for their good.

Other important sections of this admirable report deal with plague, tuberculosis—the milk and dairy arrangement in Bombay (or elsewhere in India) give every facility for the transmission of the tubercle bacilli.

We commend this valuable and detailed report to our readers' attention.

Medical Society.

ASIATIC SOCIETY OF BENGAL, MEDICAL SECTION

RECENT meetings of this Society have felt the influence of the hot weather. Dr Bhattacharya of the Campbell Medical School, read a paper on a mosquito which he claims to be a new species. This paper we have already published. The same writer read a long paper on the ever-interesting subject of the nature of the great fever epidemic in Bengal in the seventies and arrives at the not improbable conclusion that there was a combined epidemic of malarial fever and of *Kala-azar* two diseases which recent research has differentiated, but who knows if further and future research may not again join them and then explain many similarities in symptoms and in etiology.

Assistant-Surgeon Sarasi Lal Sarkar of Alambagh Houghli, read a paper on a 'Particular form of Fracture of the Skull'. The case is briefly as follows—Hindu male robust aged 60 mixed up in a land dispute was attacked and severely beaten and left unconscious on the field. The man was just able to mention a few names and died on the fourth day.

P.M.—A skin cut half an inch long in middle line of top of head, and lacerated wound—hair of scalp long and thick. The skin injury was found to be across the anterior end of the sagittal suture, more on the left than on the right. Extravasation of blood. Two fragments were found broken off from the upper and inner end of both parietal bones, forming triangular pieces, the left fragment was slightly depressed. Fissured fractures also found in parietal bones, but more marked on left side.

It was proved in court that the injury was due to a blow of a *Kodali*. The Sessions Judge

changed the charge to one of grievous hurt and the assaulter got 3 years' imprisonment.

Assistant-Surgeon Sarkar claims that this fracture is a definite variety, having characteristic features of its own.

Current Literature.

FOREIGN EXTRACTS

B Tuberculosis, typ human versus typ bovin—Eber, Director of the Leipzig University Veterinary Institute, has carried out a large number of experiments with a view to ascertain the relationship of the human type of the tubercle bacillus to the bovine type of this micro organism. Fragments of the lungs of patients who had succumbed to phthisis were implanted under the skin of guinea pigs and rabbits, in order to fix the type of the pure culture obtained, according to the description given by Kossel, Weber and Heuss. The pure cultures were made from the spleen of the infected animals, which according to Odecker's suggestion, were killed before the expiry of the fourth week after the inoculation. The cultures were then introduced into the abdominal cavity of calves which had previously been tested as to their freedom from tuberculosis by means of tuberculin. Three of the seven strains of human bacilli used were found to undergo transformation into the bovine type—when inoculated with the strain obtained from the infected calf, rabbits and calves soon succumbed.—*Manchener med. Wochenschr.*, No. 3 of 1910.)

In the *Archiv für experimentelle Pathologie und Pharmakologie*, in the supplementary volume issued as a "Festschrift" in honour of Schunedeberg, there is an article by Alburtoni and Rossi of Bologna, in which these observers detail the results obtained by them in an experimental addition of flesh to the exclusively vegetarian diet of the very poorest of the peasants of the Abruzzi. The excessive loss of nutrient material in the excreta disappeared, for not only was the animal albumin easily assimilated but also the indigestible cellulose of the vegetarian diet materials was better assimilated. This is but another proof of the uselessness of vegetarian dietary *per se* and its usefulness when corrected by the addition of flesh.

Momburg's method of securing bloodlessness of the lower half of the body, by means of an elastic band wound 2–4 times round the trunk between the crest of the pelvis and the ribs, has been tried in several cases by Zui Weit, working in Buci's clinique. It has been found to give excellent results, and to be easy to carry out. The band is applied slowly and is tightly applied when all pulsation has disappeared from the femoral artery. First, the thighs are bound with Esmarch fillets, if the patient is to be in the Tendelenburg posture, but Zui considers that this posture is not necessary for any of the operations in which Momburg's method might be required, yet insists upon the prior application of the thigh fillets. In one case out of ten the patient succumbed to the operation, and at the autopsy there was found a small mark on the mesentery—a strangulation thereof in fact. Thus he believes might have been avoided had the pelvis not been elevated.—(*Manchener med. Wochenschr.*, No. 4 of 1910.)

N.B.—Sigward has found Momburg's method of much use in obstetric practice. He uses a rubber gas tube 1½ yards long, this is stretched to its utmost by two persons and then applied in the stretched state to the trunk.—(*Archiv f. Gynäkol.*, Heft 1 of Band 89, 1909.)

The "Sphincter spermaticus" This has been discovered by Poroy of Pest. It consists of a figure of 8 shaped bundle of muscular fibres which closes the mouths of the ducti ejaculatorii in the prostatic tissue, and it is

to atony of this sphincter that Poroy attributes all the many woes of manhood, out of which the native press in this country makes such capital in the advertisement columns. Faradisation of the muscle fibres will "cure" impotence, spermatorrhœa, etc., etc., in Poroy's opinion. Doubtless this will help "suggestion" in neurotic subjects, but not all sufferers from lost or diminished virility are *ab initio* neurotics, unfortunately, and we doubt the efficacy of faradisation in the treatment of the minority.—(*Berliner klin. Wochenschr.*, No. 4 of 1910.)

Correspondence

SNAKE POISONING IN THE HILLS (7,100 FT.)

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—On Sunday, the 14th May 1911, at about 5 P.M., Rifleman in Himantia Thapa of the 2/4th Gurkhas was bitten on the right forefinger by a Himalayan viper, *Amcistrodon himalayanus*, as he laid his hand upon some grass and twigs. The snake was a small one, about 13 inches long, and was sent to the Honorary Secretary of the Bombay Natural History Society Mr. N. B. Kinnear, who has kindly identified it. It was killed at an elevation of about 7,100 ft. above the sea level in the Himalayas near Dalhousie, Punjab. Himantia thought but little of the bite and went off to take his evening meal; however, his hand rapidly became very painful and much swollen up to the wrist, and he came to hospital for treatment at 7 P.M., two hours after the infliction of the bite, a ligature was applied round the wrist by me and incised incisions were made deeply into the fang wounds and potassium permanganate crystals were rubbed in generously—afterwards the wound was bathed freely and for a long time over an hour with warm water, massage and pressure being applied downwards and outwards with a view to expelling from the wounds as much snake poison as possible, it appears to me that it would be well worth while to adopt this procedure without the application of potassium permanganate if none were at hand in the hope of reducing the quantity of snake venom in the tissues from a lethal to a non-lethal dose.

Being in camp I had no antivenene to administer.

The patient made a good and rapid recovery. The day following the bite his forearm was much swollen up to the elbow and this swelling persisted for four days, disappearing on the fifth. He suffered a good deal of pain in the armpit for two days, but I could not detect any hard or swollen glands there. The wounds in the finger remained free throughout from septic trouble and inflammation. A wet antiseptic dressing was employed with the object of permitting free oozing of blood and serum possibly containing some snake venom from the wounds. For forty-eight hours after the bite temperature was subnormal, lowest 96.8, subsequently normal.

THATH CAMP,
NEAR DALHOUSIE

G. W. FROST, B.A., M.B.,
MAJOR I.M.S.,
2/4th Gurkhas

IMPERIAL MEDICAL REFORM

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In thanking you for your usual courtesy, may I further trouble you to give publication to this communication in your hospitable columns the object of which is to invite the attention of all medical practitioners in India to the newly organized Imperial Medical Reform Union with its head-quarters at London.

As this Union intimately associates and identifies itself with the interests of practitioners throughout the British Dominions in the way of endeavouring to set them on a firm footing, and so to speak elevating their status both intrinsic and relative, I think it will attract the notice of the whole medical profession in this country—Government employees as well as those engaged in a private capacity—and indeed if taken up and supported with the spirit and zeal it deserves it will surely prove the redemption and salvation of struggling "doctors" in India. It is the only organization of its kind which admits to membership all Indian and Colonial members of the medical profession, and besides having many interesting and useful objects, it is intended to reform and reconstitute the General Medical Council which it is admitted on all hands, but inadequately represents the large profession, and also more importantly, to establish a state qualifying examination for the accomplishment of which, all previous attempts to induce the

Legislative to this much demanded reform in hand have invariably failed. It is obvious that success in this direction can only be achieved by uniting in a common sodality medical men in all parts of the British world, and it is earnestly hoped therefore that practitioners in India, inclusive of all grades and classifications, will lend their cordial support to this Union and join hands with their English and Colonial confreres to promote this and other measures calculated to advance the interests of the whole profession.

The to be derived benefits will be obvious to anyone who will trouble to acquaint himself with the objects of this Union too large to be repeated here, and even if the older and time worn practitioners in India do not see the prospect of a substantial gain to themselves, it is hoped that in their selfishness, they will not forget their younger confreres and even the rising generation. Further, the call is made also to military and civil assistant surgeons alike to combine themselves in their own redemption, setting aside all questions or feelings of personal antipathy for "Unity is Strength" all the world over! The difficulties we have been labouring under is entirely due to our own indifference and division, and who is to remove a fault which lies at our door but ourselves? The time has come to distract the indifferent sluggish from his protracted slumber and to bring him to realization of his reprehensible condition!

The subscription to the Union is 10s 6d per annum for which sum members will also receive a copy of the *Medical Times* weekly post free, which journal has been adopted as the official organ of the Union.

Applications for membership should be made to the Honorary Secretaries —

Dr George Brown or Dr Pollock Simpson, 17, 18, Basinghall Street, London

Trusting Sir, you will, as Editor of the most largely read Medical Journal in India append a note to this letter and thereby give a clarion call to the profession to awake from their long continued lethargy and apathy. With apologies for occupying so much of your space

I am, Sir,
Yours faithfully,
B J BOUCHE,
Milt Asst Surgeon

[We invite opinions — ED, I M G]

RUPTURE OF UTERUS WITH RECOVERY

To The Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I send in a report of a case of complete rupture of the uterus with recovery without surgical interference, which I think is interesting enough to be placed on record.

In one of the British medical journals of 1909, a continental paper reported a case, but that was admitted to be a very small rupture.

On the 16th March 1910, Jainub, a multiparous, was admitted into the female department of the Civil Hospital here, with a history of having been in labour for 24 hours with no advance of the child. There was no collapse and no history of there having been a sudden agonising pain.

State on admission—The patient looked well, pulse steady and good, the abdomen was protruding abnormally around the umbilicus, shape of pregnant uterus could not be made out. The protrusion on palpation was found to consist of intestines. Per vaginam the cervix was found to be torn on the right, but the rest of its circumference was lying around the head of the child, which was high up in the abdomen.

There was a discharge of bright coloured blood, and the cervix could be pulled down to the vulval opening.

As the head of the child was long and soft and there was ample room, forceps were at first attempted, but discarded. As the right blade refused to slip up and profuse haemorrhage was taking place, perforation was quickly performed and a large quantity of fluid with just a smattering of almost fluid brain substance came away, the foetus was then extracted quite easily by hand. The placenta was found lying detached and was removed. The hand was then reinserted, and the rupture was found to extend from the cervix, along the right side of the uterus right up to the right corner the uterus being, for all the world, like a monk's cowl. There was no prolapse of the intestines into the vagina, although they could be felt against the hand during examinations. The patient's pulse remained good, and an operation was suggested, but refused, and the patient went home, where I attended her.

For 3 days there was great distension of the abdomen with high temperature. On the third night, diarrhoea set in, and next morning when I saw her, the abdomen was quite placed, and the uterus could be seen and felt, quite contracted, being normally round on the left side, but flat and ill defined on the right and there was tenderness on pressure. No marked haemorrhage had

taken place since the delivery. Treatment was confined to fever mixtures and opium and to controlling the diarrhoea for the first 5 days, then, as a purulent discharge began, careful saline douches were commenced and continued for 2 months. The high temperature (104°–105°) lasted for over 3 weeks, and gradually fell to normal within 3 days. From an extremely well nourished woman, she became a mere skeleton with deeply disfigured conjunctiva. During the 3 weeks the abdomen was constantly changing its appearance.

Sometimes a hard mass could be felt only in the right inguinal region, sometimes the resistance extended to the hypochondriac, sometimes as far back as the right renal region, and always these masses would subside after a more than usually profuse discharge of pus per vaginam. On no 3 consecutive days did the abdomen present the same appearance. Once when she complained of pain in the lumbosacral region, there was higher temperature accompanied by a severe cough with expectoration.

I examined her per vaginam for the first time a month after delivery and found the uterus still ununited. Since then I have examined her frequently generally after her menses when she has complained of pain.

An interesting point about this case is that, although the patient is subject to epileptic fits, no attacks occurred during her illness. She has since had 2 or 3 attacks. She is now an ordinary healthy looking woman, not as robust as she was before, and comes to the dispensary frequently carrying a heavy child of 4 years. Needless to say, the patient, with the exception of the first 4 or 5 days after delivery, never listened to orders, but used to get up to go from one bed to another, and even to cook. Once a month after delivery, I found her 200 yards from her home on her way to me, because I had not been to see her for 2 days! This exertion brought on all the old symptoms and the mass again appeared in the inguinal region, but subsided again in a few days.

I apologise for taking up so much space.

Yours, etc.,

BEATRICE A C BREWSTER,
In charge of the Female Department,
HOSHIARPUR

QUERIES ON LEPROSY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I wish to know what are the proofs of leprosy being a contagious disease. As for instance, there is a leper suffering from both anaesthetic and tubercular leprosy, but with no ulcer or affection of the fingers, etc., he lives with his wife and children, now the question is how and after what period will the wife and children be affected by leprosy?

2 Leprosy sometimes takes years to develop completely, therefore, at what stage of the disease should the patient be isolated?

3 The use of chloride of sodium in leprosy sometimes affects the kidneys diminishes the quantity of urine and produces swelling of legs, increases the redness of the skin. Can it be avoided by means of my special treatment or adding anything with chloride of sodium?

4 What effects does Nastin B produce in anaesthetic leprosy, specially when the patient had been suffering from diabetes mellitus before the appearance of leprosy?

5 Can leprosy be a complication of diabetes mellitus on account of the patient subsisting on mutton, fish and milk only for years?

Hoping that you will kindly enter these questions in the Indian Medical Gazette

Yours, etc.,

S NUR MOHAMAD,
Retired Military Hospital Asst.,
Marian Bazar,
Barrackpore

REMEDY FOR THE BUGS IN RAILWAY CARRIAGES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Re question of killing the bugs, printed at page 77 in your Journal of February 1911, I ask your favour of kindly giving the following few lines on the subject in your current issue and oblige —

"Kerosene Oil" is the cheapest article which, if slowly syringed by a small syringe in the crevices of the carriages as well as painted freely over all the woodwork, can fully destroy the bugs and their eggs too.

After passing 24 hours of this operation the carriage should be well painted with a piece of linen soaked in the mixture of a sweet oil (Til li ka Tail) and water. This action will remove the odour of the kerosene oil.

Kerosene oil being a part of the varnish could hardly damage it.

[AUG , 1911.]

Though I could not get any chance of trying my suggestion in the railway carriages, yet I have already tried it on different materials of households to my entire satisfaction—this I can say, if tested, would prove correct.

I have the honour to be,

Sir,

Your most obedient servant

MOHAMAD AMIR HASAN

Sub Assistant Surgeon, Dhawaria Disp., Kheri Dist.

31st March, 1911

THERAPEUTIC NOTICES

"A question of some interest in sanitary circles is to what extent school and library books are responsible for the spread of disease. In all our principal health departments of course, directly an infectious case is notified, steps are taken to ascertain what library books, if any, are on the infected premises. The books are then collected and disinfected or destroyed according to the local regulations. In smaller communities the problem is not as simple, as there is some hesitation to destroy expensive books, and facilities do not exist for disinfecting them on a large scale. Under such circumstances a suggestion issued by the Scottish Education Department may be adopted with advantage. It runs as follows—

"Take as many pieces of blotting paper as may be required. Cut them to the size of the book. Soak them in a disinfectant of the necessary strength. Insert one of the soaked pieces between each two leaves of the book. Close, and cover up the whole in a waterproof sheet for 24 hours. On opening, gently remove the blotting paper, and if the soiling has not been too great the book will be found uninjured."

A correspondent who draws our attention to these regulations mentions that sheets of blotting paper soaked in a solution of 1 part of *Isat* in 200 of water prove quite efficient in the cure of the common infectious diseases. Such precaution is certainly not costly, and it will commend itself to many who have been inclined to regard the disinfection of books as outside the range of practical politics."

MERCK'S MANUAL OF THE MATERIA MEDICA

(Fourth Edition)

A Ready Reference Pocket Book for the Physician and Surgeon. Containing a comprehensive list of Chemicals and Drugs—not confined to "Merck's"—with their synonyms, physiological effects, therapeutic uses, doses, incompatibles, antidotes, etc., a table of Therapeutic Indications, with interspersed paragraphs on Bedside Diagnosis, and a collection of Prescription Formulae, beginning under the indication "Abortion" and ending with "Yellow Fever," a Classification of Medicaments, and Miscellany, comprising Poisoning and Its Treatment and an extensive Dose Table, a chapter on Urinalysis and various tables, etc. (Merck & Co., 45 Park Place New York 1911, 493 pages. While intended for distribution in the United States, a limited number of copies have been set aside to supply requests from members of the medical and pharmaceutical professions in other English speaking countries. Mailed on receipt of application accompanied by postal money order for 1s 6d, or 35 cents.)

THERMOS PATENTS

GRANT OF AMENDED PATENT CONFIRMED BY THE LAW OFFICER

On Friday, the 26th May, 1911, the Appeal to the Law Officer from the decision of the Comptroller General, granting the Thermos Company an amended patent in respect of the "Thermos" flask, was decided by the Solicitor General (Sir John Simon) in favour of the Thermos Company and the amended patent was ordered to be sealed accordingly.

All who have used the Thermos flasks on exploring, *shikai*, or route marching, are well aware of their value.

Service Notes

THE I M S DINNER IN LONDON

THE annual Indian Medical Service dinner was held at the Hotel Cecil in London on 14th June. Surgeon General W R Browne, CIE, presided. The guests were General Sir Beauchamp Duff KCB, Sir Henry Morris, Bart., President of the Royal Society of Medicine, Austin Low, Esq. of Messrs Grindlay & Co., the Editor of the *Lancet* and the

Editor of the *British Medical Journal*. The following is a list of the officers present sixty two in all. There were no speeches, and only one health, that of the King proposed by the President.

Surgeon Generals

Bainbridge, G	Moorhead, J
Bianfoot, A M, CIE	Muloney, T R
Browne, W R, CIE	Nott, A H
Gleany, J P	Palk, C H L
Hay, G	Thornhill, W H
Spencer, Sir L D, KCB, R HS	Warlike, D

Colonels

Carr Calthorp, C W	Major
Henderson, W H	Byron, R
Hughes, D E	Burnett, S H
Joubert de la Feite, C H	Foulkes, T H
Little, C C	Greig, E D W
Murray, R D	Hooton, A
Reeves, F C	Hunt, S
Shearer, J, CB, DSO	Leicester, T C H
Stephen, A	Maddox, R H
Willis, C F	Moorhead, A

Lieutenant Colonels

Anderson J	Captains
Charles, Sir R H, KVO	Boalch, W H
Crawford, D G	Bindfield, E W C
Dimmock, H P	Franklin, G
Dury, F J	Good, J
Duncan, A	Harris, E T
Freyer, P J	Heron, D
Gimlette, G H, CIE	Leonard, W H
Hastings, H N U	Long, W C
Holmes, R A K	Oxley, J
Johnson, E R	Shuttle, F B
Keegan, D F	Tucker, W H
Lowdell, C G W	
Macdonald, D P	
Macwatt, R C	

LT COLONEL WILLIAM HENRY QUICKE of the Bombay Medical Service, retired on 25th April 1911. He was born on 7th March 1858, educated at Westminster Hospital, took the diplomas of M R C S and L S A in 1880 (also the F R C S, England, in 1896), and M D Brussels, in 1882, and entered the I M S as Surgeon on 31st March 1883, becoming Surgeon Major on 31st March 1895, Lt Colonel on 31st March 1903 and being placed on the selected list on 13th January 1909. He served in the Zob Valley expedition on the N W Frontier of India in 1884 being present at the affair at Daulatzai, and in the Burmese War in 1885-1886 receiving the medal with clasp. For some years past he had been Professor of Surgery in the Giant Medical College, Bombay, but had been on sick leave since 18th December 1909.

DEPUTY SURGEON GENERAL WILLIAM PEYTON PART RIDGE, Bombay Medical Service retired, died at Beckenham, Kent, on 27th May 1911. He was born on 12th September 1830, took the diploma of M R C S in 1854 and entered the I M S as Asst Surgeon on 3rd July 1854 becoming Surgeon on 3rd July 1866, Surgeon Major on 1st July 1873, and Brigade Surgeon, on the institution of that rank, on 27th November 1879. He retired with a step of honorary rank on 7th February 1885. He served in the Persian War of 1856-1857, and was present at the capture of Bushire and Muhammara receiving the medal and clasp, in the Indian Mutiny, in Thar and Puker, in 1859, and in Abyssinia in 1868 in the Hospital Ship *Star of India*, receiving another medal.

L T COLONEL LIONEL JOHN PISANI, of the Bengal Medical Service, retired on 10th June 1911. He was born on 9th August 1861 educated at Charing Cross Hospital, took the diplomas of M R C S and L S A in 1886 also subsequently the F R C S, England in 1895, and entered the I M S as Surgeon on 1st April 1896, becoming Surgeon Major on 1st April 1898 and Lt Colonel on 1st April 1906. Most of his service had been spent as a Civil Surgeon in the United Provinces, but for the past two years he had been on furlough. He served on the North West Frontier of India in the Hazara Campaign of 1888, and was present in the action at Kotkai, receiving the medal and clasp. He was the author of a work on "The Pathology of Relapsing Fever," Calcutta 1897, and was qualified as Interpreter in Spanish.

SURGEON GENERAL PERRY HUGH BENSON, Surgeon General with the Government of Madras, has retired from the Service and is succeeded by Colonel W B Bannerman.

W N, the well known Bacteriologist of Patel Laboratory, Bombay

Surgeon General Benson's first commission dates from 31st March 1874. He was born in 1852, was educated at "Butts", took the M R O S in 1873 and M B C M of Aberdeen at the early age of 21 years. The Army List assigns him no war service. He served for many years in Mysore, he was promoted to be Surgeon General, Madras, on 1st April 1908, after 34 years' service and now retires after 37 years' service in India.

Surgeon General Benson's kindness and genial nature and determination to stick up for the men under him are well known to all in Madras and elsewhere, and his desire to help those who served under him is manifested (it is pretty well known) even in the last weeks of his tenure of the appointment.

We wish him many more years in retirement.

We congratulate Madras on getting Surgeon General Brunnerman to succeed Surgeon General Benson from 1st June 1911. Surgeon General Brunnerman was born in July 1859 and entered the Service in September 1883, having taken the degrees of M R O M in Edinburgh in 1881. He afterwards took the M D (Edin.) in 1889 and the B Sc (in Public Health) in 1896, and has since been the recipient of many degrees and distinctions. He was recently promoted Brevet Colonel.

Men in India do not need to be told of Surgeon General Brunnerman's scientific fame, as the head of the great Laboratory at Patel. His name must always be associated with the researches into the cause of plague and with the establishment of the rat flea as the agent in the dissemination of this disease.

HARTY congratulations to Major Ronald Ross, I M S, (ret'd), on his K C B in the Coronation Honours List.

UNDER the provisions of Articles 260, 308 (b) and 233 of the Civil Service Regulations privilege leave for three months combined with furlough for one year and three months and study leave for six months, is granted to Captain E A Walker, I M S, Civil Surgeon, Bissein with effect from the date on which he may avail himself of the privilege leave.

MAJOR F A L HAMMOND I M S, on return from leave is appointed to be Civil Surgeon, Bissein, in place of Captain E A Walker, I M S, proceeding on leave.

CAPTAIN S B MFHTA I M S, was granted 30 days' privilege leave on or after 1st June 1911.

MAJOR V H ROBERTS Plague Medical Officer, Rohtak, was granted one month's leave on completion of a course of training at the Central Research Institute at Kasauli.

WE regret to record the death on 8th April 1911 of Major James Evelyn Pilcher, U S A Medical Corps. He was for many years Secretary of the Association of Military Surgeons and Editor of the well known Journal, *The Military Surgeon*. He served in the Spanish American War of 1898-9.

CAPTAIN E OWEN THURSTON, F R C S, I M S, on return from furlough in May, was appointed to act as Professor of Surgery in the Medical College Calcutta, vice Major Cecil Stevens, F R C S, I M S, gone on six months' leave.

MILITARY ASSISTANT SURGEON H J J GARROD, I S M D, Civil Surgeon of Etah, privilege leave for two months, from the 27th May 1911, or subsequent date.

THE services of the undermentioned Indian Medical Service officers are placed temporarily for plague duty at the disposal of the Government of the United Provinces —

Captain E Bisset, M B

Captain A N Dickson, M B

Captain R S Townsend, M P

Lieutenant T D Murison

LIEUTENANT N S HARVEY, I S M D, Civil Surgeon, Una, privilege leave for six weeks, with effect from the 6th June 1911, or date of relief.

CIVIL ASSISTANT SURGEON DINPSH KRISHNA MUKHARJI, attached to the Sadr dispensary, Una, to hold civil medical charge of the district in addition to his own duties, vice Lieutenant N S Harvey, I S M D, granted leave.

MAJOR W YOUNG, I M S, Civil Surgeon, Cawnpore, to hold visiting medical charge of the Una district, vice Lieutenant N S Harvey, I S M D, granted leave.

IN supersession of notification No 2603-II/237, dated the 24th May 1911, Captain F P Mackie, I M S, whose services have been placed by the Government of India at the U P Government's disposal, to officiate as Civil Surgeon of Faizabad.

CIVIL ASSISTANT SURGEON GANPAT RAI attached to the Sadr dispensary at Azamgarh, held civil medical charge of that district in addition to his other duties from the 18th to the 30th May 1911, inclusive.

CAPTAIN S C PAL, I M S, medical officer in charge of depots at Fatehgarh, to hold civil medical charge of that district in addition to his military duties as a temporary measure, vice Captain H R Nutt, I M S, transferred to Azamgarh.

CAPTAIN W LAPSTEE, I M S, Civil Surgeon of Azamgarh, privilege leave combined with study leave for nine months and seven days and with furlough on medical certificate, for a total period of one year, four months and twenty four days, with effect from the 18th May 1911.

MAJOR C B PRALL, I M S, Superintendent of the Central Prison at Bareilly, is granted privilege leave for five weeks, with effect from the 3rd July 1911 or subsequent date.

MR J R T BOOTH, I C S, to hold executive charge of Bareilly Central Prison, in addition to his own duties, during the absence on privilege leave of Major C B Prall, I M S, and Lieutenant Colonel W H E Woodwright, I M S, to hold medical charge of Bareilly Central Prison in addition to his own duties during the absence on privilege leave of Major C B Prall, I M S.

CAPTAIN C A SPRAWSON, I M S, Civil Surgeon, was on study leave from the 10th January 1911 to the 26th April 1911.

THE six months' study leave granted to Major W M Pearson, I M S, Civil Surgeon, in Government's Notification No 851-II/267, dated the 1st March 1910, has been commuted into five months and six days' study leave and twenty five days ordinary furlough by His Majesty's Secrety of State for India.

In supersession of Notification No 2479-II/11, dated the 18th May 1911, Major W M Pearson, I M S, was on study leave from the 17th October 1910 to the 26th January 1911, and from the 28th January 1911 to the 23rd March 1911.

On return from leave Major T Stodart, I M S, took over the Civil Surgeoncy of the Ruby Mines District, relieving Captain H S Matson, I M S on 10th June.

THE services of Captain J Morrison I M S, were replaced at the disposal of the Government of India.

ASSISTANT SURGEON S M MUKARJI has been appointed to act as Civil Surgeon, Dinajpur.

CAPTAIN ARMYACE GRFFY, I M S, on appointment to the Civil Medical Department, was posted to Jalpaiguri as Civil Surgeon.

LIEUTENANT COLONEL A MILNE, I M S, for many years Assay Master, Bombay Mint, retired in July and has been succeeded by Lieutenant Colonel J Lloyd Jones, I M S, who has been Assay Master, Calcutta Mint, for some years past.

LIEUTENANT COLONEL LLOYD JONES will be much missed in Calcutta, and the United Service Club gave a large complimentary dinner in his honour before his departure.

MAJOR BOURKE, I M S, comes to Calcutta as Assay Master and Lieutenant Colonel Hughes, I A, remains in Calcutta as Deputy Assay Master.

WITH effect from the 1st June 1911, Captain H Ross I M S, to be chief plague officer in the United Provinces and to continue on duty in connection with the medical college, Lucknow, in addition to his other duties.

THE undermentioned officers whose services have been placed temporarily at the disposal of the U P Government by the Government of India, to be employed on plague duty in the districts entered against their names —

CAPTAIN E BISSET, I M S, Meerut Captain R S Townsend, I M S, Aligarh, Captain A N Dickson, I M S, Ghazi pur, and Lieutenant T D Murison, I M S, Azamgarh.

CIVIL ASSISTANT SURGEON Kashi Nath in charge of the Sadr dispensary, Etah, to hold charge of the civil medical duties of that district in addition to his own duties.

CAPTAIN G A JOHNSON, I M S, officiating Civil Surgeon, Manipur, to hold visiting medical charge of the Etah district.

MAJOR W S WILLMORE, I M S, Civil Surgeon on completion of his training in clinical bacteriology and technique at Kisauli, to Mizapuri.

CONGRATULATION to Surgeon General MacNeice, P M O, 8th Lucknow Division, and to Colonel Tom Granger, I M S, P M O, Burma Brigade (now on leave home), on becoming C B in Coronation Honours List.

WE are also glad to see the K C B conferred on Surgeon-General Adam Scott Reid, I M S (ret'd). His speech at an I M S dinner some years ago, which flattered the optimistic, will long be remembered.

HIS EXCELLENCE THE GOVERNOR OF BOMBAY in Council is pleased to appoint Dr J H Walsh to act as Deputy Sanitary Commissioner, Gujarat Registration District during the absence on leave of Lieutenant Colonel H C L Arnim, M D, I M S, or pending further orders.

MAJOR T S NOVIS, F R C S, I M S, to be Second Surgeon, J J Hospital, and Presidency Surgeon, First District, and Professor of Anatomy and Curator of Museum, Giant Medical College.

HIS EXCELLENCE THE GOVERNOR OF BOMBAY in Council is pleased to make the following appointments during the absence on deputation of Lieutenant Colonel B B Guyfoot, M D (Dun), I M S, or pending further orders —

Major V B Bennett, M B, B S (Lond), F R C S, I M S to act as Civil Surgeon, Karachi.
Captain C C Murison, F R C S (E), D P H (Edin and Glas), I M S to act as Civil Surgeon, Superintendent Lunatic Asylum, and Superintendent, Medical School, Hyderabad.

HIS EXCELLENCE THE GOVERNOR OF BOMBAY in Council is pleased to make the following appointments, vice Lieutenant-Colonel W H Quicke, F R C S, I M S, retired —

Lieutenant Colonel Ashton Street, M B (Cantab), F R C S, I M S, to be Senior Surgeon, J J Hospital, and Professor of Surgery and Clinical and Operative Surgery, Giant Medical College.

LIEUTENANT COLONEL H C L ARNIM I M S, is granted, from the 8th June 1911 or the date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to two years.

THE services of Lieutenant Colonel B B Guyfoot, M D, I M S, are placed at the disposal of the Government of India with effect from the 13th July 1911.

HIS EXCELLENCE THE GOVERNOR OF BOMBAY in Council is pleased to appoint Major E F Gordon Tucker, M B, B S (Lond), M R C P, (Lond), I M S, to act as Second Physician and Registrar, J J Hospital, and Professor of Pathology and Morbid Anatomy and Curator of Pathological Museum, Giant Medical College, vice Major L T R Hutchinson, M D, B C (Cantab), D P H, D T M & H (Cantab), I M S, during the absence on leave of Lieutenant Colonel C H L Meyer, M D, B S (Lond), I M S, or pending further orders.

HIS EXCELLENCE THE GOVERNOR in Council is pleased to make the following appointments —

Major R W Anthony, M B, C M (Edin), I R C S, (E), I M S, on return from leave, to be Civil Surgeon, Belgium.

Major A G Sugent, I M S, on relief, to be Civil Surgeon, Ratnagiri.

THE services of Captain R M Birion, I M S, are replaced at the disposal of the Government of India.

HIS EXCELLENCE THE GOVERNOR OF BOMBAY in Council is pleased to appoint Captain J L Lunham, M B, B C H (R U I), D T M & H (Cantab), I M S, to act as Personal Assistant to the Surgeon General with the Government of Bombay, vice Captain R M Birion, I M S, pending further orders.

HIS EXCELLENCE THE GOVERNOR OF BOMBAY in Council is pleased to appoint Captain M S Iranji, I M S, on relief, to act as Civil Surgeon, Bijapur.

THE following officiating promotion is ordered, with effect from the date specified —

Major A M Fleming, M B, C M, I M S, from Civil Surgeon, 2nd Class, to Officiating Civil Surgeon, 1st Class, with effect from 14th February 1911, consequent on the grant of privilege leave to Lieutenant Colonel W D Sutherlin M D, C M, I M S, Civil Surgeon, 1st Class.

THE CORONATION HONOURS — A liberal share of these honours has fallen to the Medical Profession. Besides those given to the Medical Services we may specially mention the grant of baronetcies to Mr Butlin, President of the Royal College of Surgeons of England and of the British Medical Association and to Dr Osler, Regius Professor of Medicine in the University of Oxford. The honour bestowed upon officers of the R A M C and I M S is as follows —

K C B	Surgeon General W L Gubbins, D G, Army Medical Service
	Surgeon General A S Reid, Bengal, retired
	Major R Ross, Madras, retired
	Surgeon General J G Macneice, R A M C, P M O, Lucknow
	Surgeon General G W Robinson R A M C, P M O, Aldershot
	Colonel C F Willis Bo M S, P M O, Mhow
	Colonel T Granger B M S, P M O, Burma
	Lieutenant Colonel H E R James, R A M C, retired

In the Bengal Service, it is only two years since a K C B was bestowed upon Sir Lionel Spencer in 1909, and three years since the last C B was given to Colonel Shearer in 1908. In Madras, the last grant of a K C B was in 1906, to Sir John Donnelly, who only lived a few months after the receipt of that honour; the last C B was that given to Major Ross in 1902. In Bombay it is over forty years since any officer received a C B, the two last being those given to D I Gs E Mahafy and S M Pelly in August 1865. The Bombay Service has never had a K C B, but the only officer of the I M S who has attained the rank of G C B, was a Bombay Surgeon, Sir John McNeill. Curiously, McNeill never received either the C B or the K C B. He is also the only member of the I M S, who has ever been sworn a member of the Privy Council.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters, and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

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Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

Indian Museum Report	
Sir R Boyce's Yellow Fever and its Prevention (J Murray)	
Papova of Mayo Clinic (W B Saunders & Co)	
Cainmalt Jones Therapeutic Inoculation (Macmillan & Co)	
Vazifdar's Physiology of Central Nervous System (Junes & Co, Bombay)	
Zahorsky's Golden Rules of Pediatrics (C V Mosby Co)	
Edinburgh Royal College of Physicians Laboratory Reports Vols I and II (Oliver & Boyd)	
Jail Administration Reports: Punjab	
E B & A Bengal	
Bombay Health Officer's Report	
Canal Zone Proceedings, Vol II, 1910	
Powell and Hartley's Diseases of Lungs and Pleura (H K Lewis) (6th Edition)	
Ellihill and Wechselmann's Treatment of Syphilis with Salvarsan (Reedman, Ltd)	
Pitcher's Practical Cystoscopy (W B Saunders & Co)	
Aitken's Hospital Management (W B Saunders & Co)	
Musser and Kelly's Practical Treatment, Vol II (W B Saunders & Co)	

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Capt O S J Moses, I M S, Calcutta	Capt Betts, I M S, Capt E O Taylor, I M S, Major Cornwall, I M S, Lieut Knowles, I M S, Capt Megaw, I M S, Calcutta
Capt Desfosses, I M S, Major Reinier, I M S, Chindwara	Dr Croley, Khargpur

Original Articles

DENGUE-LIKE FEVERS

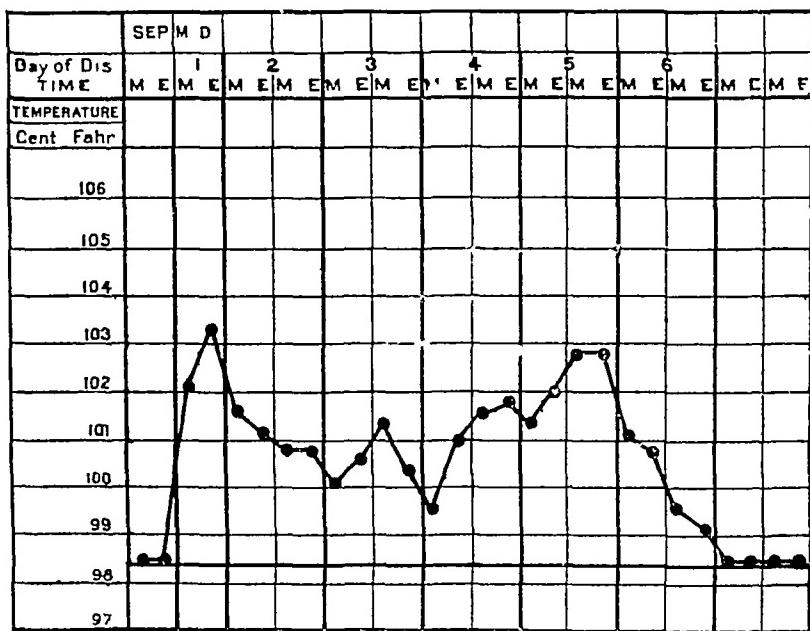
BY A CAMPBELL MUNRO,
LIFUT, I.M.S.

Of recent years, a number of epidemics in Indian regiments of short, non-malarial fever have been described in the *Indian Medical Gazette*. In Chital (McCaughan and Wall) in Sialkot (Fooks), in Lahore Cantonment (James) and in Nowshera (Wimberley), a pyrexia of a certain definite type has been noted. In Calcutta Leonard Rogers has identified a similar fever which he named 'Seven-day Fever'. In the autumn of 1910 I witnessed an outbreak of this disease among the sepoys of the 27th Punjabis stationed at Alipore Calcutta. Since a military unit presents obvious advantages over an uncontrollable civil population to the investigator of an epidemic disease and as former descriptions of Seven-day Fever seem to have been based largely on the disease as it appears among Europeans I think that my cases may be worth recording.

described in connection with Seven-day Fever. There were all degrees of severity. In 57 cases (52 per cent), the duration of the fever was six or seven days, and the temperature chart showed the characteristic saddle-back curve (see charts 1 & 2). In one-half of these 'Seven-day' cases the temperature touched normal during the period of remission, this differs from Rogers' experience among European patients, for he says "in five-sixths of my cases, the temperature never fell below 99° F during the usual remission, while in fewer still did it actually reach the normal line, a point in which this Seven-day Fever differs most essentially from the Three-day pyrexia ending in crisis of true epidemic dengue".

The other half (fifty-two) of my cases had a shorter duration, usually of a little over two days (see charts 3 and 4). These cases were milder than those of the first type, the temperature was lower, but in other respects they were clinically identical with the cases of longer duration, to all appearances they represented the initial paroxysm of the Seven-day case, the second paroxysm being suppressed. In a few cases, there was a slight rise from normal on the sixth day (chart 5)—an indication of the arrested secondary rise.

CHART 1



I joined the regiment in the beginning of July, 1910. In the preceding month, about 20 cases of Calcutta Fever had occurred. The figures for the succeeding months were—

July	August	September
57	39	13

109 in all. Only four cases occurred after the middle of September. During these three months there were 13 cases of malaria.

Symptomatology—The cases did not show the uniformity in their clinical picture that is usually

The onset was usually sudden, and in 7 per cent of the cases a mild rigor occurred at this stage. Occasionally there were prodromal symptoms—malaise, headache, slight fever, etc., before the commencement of the attacks.

The General Appearance of the patient during the first few days was very typical. He usually lay on one side somewhat huddled up. His face and neck were covered with a bright red flush. The face was markedly puffy, particularly below the eyes. The conjunctivæ were moist and glistening and sometimes much injected, partly

owing to the puffiness of the face, the patient's expression was heavy and stupid. During the course of the fever, the man was often quite prostrated and could hardly raise himself in bed.

Pains—Headache was constant and was usually severe. Its location was almost always frontal or post-orbital. In two-thirds of my cases there was severe pain stiffness and tenderness on deep pressure, in the lumbar region of the back. Many patients had similar pains in their thighs and calves, and in the muscles of their arms, while in some the pains were present all over the body. In no case was pain referred to bone though pressing tendon or muscle against bone caused pain.

Eyes—Congestion of the conjunctivæ was common during the first few days of disease, movement of the eye ball was frequently painful.

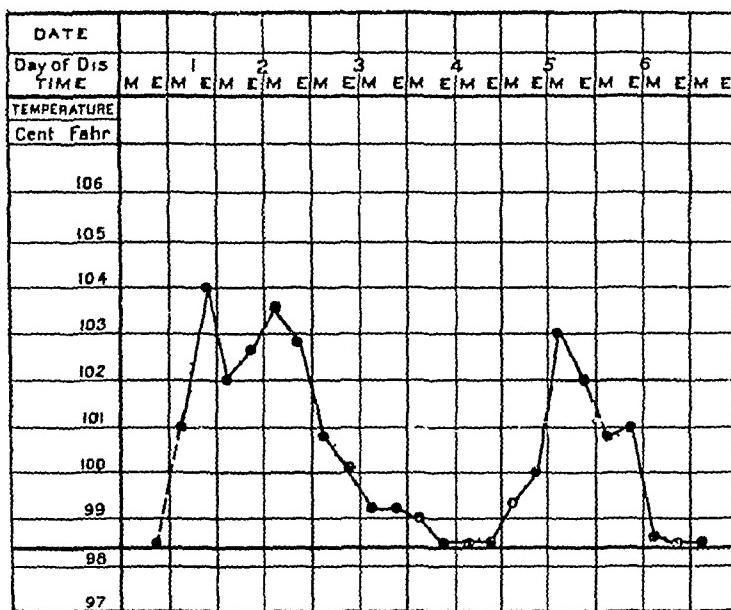
lost thirst was not a marked feature. In 50 per cent of my cases, the bowels were constipated, two cases had diarrhoea and the rest were normal.

The liver was never enlarged, two patients had enlarged spleens, but the enlargement was taken to be of old standing. Respiratory symptoms catarrh, etc. were absent except in a few cases where they appeared to be accidental complications.

Rashes—The early flushing of the skin of the upper part of the body constitutes the 'Primary Rash' and was always seen. It was brightest during the first 48 hours, but was sometimes visible for four or five days altogether in the long form of the disease.

The secondary rash, mentioned by Rogers as occurring in 7 per cent of his European cases, appeared in only one of my cases. The dark skin

CHART 2



The pulse was usually slow in proportion to the temperatures. Pulse-rates of 80—100 accompanied temperatures of 103° to 104°. The slowing of the pulse was more marked late in the disease, but it was noted also in many of the two- and three-day cases.

Blood changes—There was no marked anaemia. Some degree of leucopenia was common, films from between 30 and 40 of the earlier cases were examined for malarial parasites with negative results, thereafter it was found quite easy to diagnose the cases from their general appearance even on the first day of the fever.

Digestive Tract—The tongue was usually covered with a white film except at the tip and edges. Anorexia was invariably present, nausea and vomiting were noted as occurring in nine cases, and were confined to the first few hours of the attack. The sense of taste was more or less

of the Asiatic probably masks many of the fainter rashes that are quite well seen in the European.

Convalescence was rapid and uninterrupted in nearly all cases. Aching pains often persisted for a day or two after deservescence. A recurrence was noted in only one case.

Treatment—was on general lines. Quinine was abandoned as useless and as only increasing the headache.

Incidence—The average strength of the regiment from 1st July to 30th September was 630, so that the case-rate was 173 per mille. This somewhat high rate shows that the native of India who has not become immune through residence in an endemic area is just as susceptible to this disease as is the European. This point is well brought out by comparing the figures for Calcutta Fever of the three regiments that formed the Calcutta Garrison in 1910. Thanks to the

courtesy of the S.M.O., Calcutta and the M.O. 88th C.I., I am able to show, in the accompanying table, the corresponding figures of these units from 1st July to 30th September 1910.

TABLE I

Regiment	Approximate Strength	Admissions for Calcutta Fever	Rate per 1000 of Strength
27th Punjabis	630	109	173
Rifle Brigade	800	79	99
88th C.I.	470	10	22

All three regiments had arrived in Calcutta in the preceding cold weather and therefore went through their first fever season in the district together. The 27th Punjabis and the 2nd Battn Rifle Brigade came from Multan and Shahjahanpur respectively in neither of these places is Seven-day Fever known to occur. The 88th Carnatic Infantry came from Madras where the malady is endemic. It will be seen that the

gelidus I never met with any specimens of Phlebotomi though I searched barrack-rooms, latrines and the cantonment generally for them.

In 1906 and in 1909, Capt Megaw, R.M.S., contributed articles to the *I.M.G.*, comparing Seven-day Fever and Three-day Fever of Chital with Dengue, and he contended that these three conditions were really one disease. The occurrence of mixed epidemics of Three- and Seven-day Fever (such as the one I have just described and the outbreak in the 15th Lancers described by Col Fooks, R.M.S., in 1908) lends support to this view. Since Capt Megaw wrote fresh observations have been made on these short fevers in various parts of the world, and it is interesting to compare them as they have appeared in different localities.

1. *Dengue*—In reading the different accounts of Dengue, one is struck by the variability of type that this disease presents. The general type of cases in one epidemic may differ very widely from the type in another, as instances of epidemics that differed very considerably in

CHART 3.

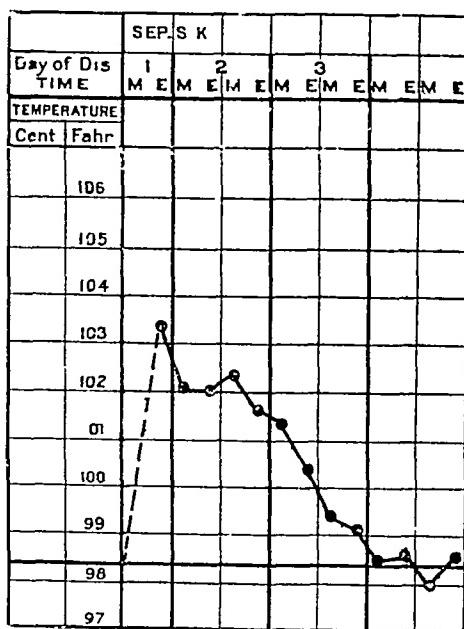
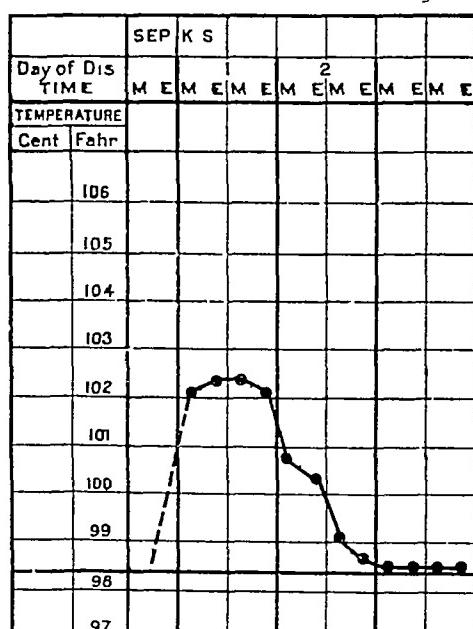


CHART 4.



case-rate of the non-immune Indian unit was even greater than that of the non-immune British unit, while the immunised Madrasis had only one-eighth the case-rate of the Punjabis.

Mode of Transmission—The very definite seasonal incidence of Seven-day Fever seems to point to insect agency as a factor in its propagation. As regards the epidemic in question, it is difficult to explain by any other theory—e.g., transmission by food or by personal contact—the irregular, scattered way in which the cases occurred. The commonest mosquitoes found in the barrack-rooms at the time of the epidemic were *Stegomyia scutellaris*, *Fatigans* and *C.*

then clinical type, one may cite the Indian epidemic of 1871-3, the Brisbane epidemic of 1905, and the Fort McKinlay (Philippines) epidemic of 1906. Within a single epidemic, too, there is wide variation among the individual cases. Ashburn and Craig say “There is no symptom that can be said to be pathognomonic or even constant, if we except fever,” and this feature of the disease is emphasised in most modern text-books. Some of the chief variations may be given—

1. The onset has sometimes been described as being dramatically sudden. A man while following his occupation is suddenly prostrated by pain,

On the other hand Ashburn and Craig consider such cases quite exceptional

2 Temperature—In the Indian epidemic of 1872, the temperature rose quickly and then fell to normal, all in from one to three days. Occasionally there was a slight secondary rise between the 4th and 6th days (Rogers). In the Brisbane and Fort McKinlay epidemics, the primary rise of temperature lasted for three or four days, the fever then fell for a few hours and then rose high in the final paroxysm. That is to say, in the first case, one-paroxysm cases were the rule, while in the two others the double-paroxysm was by far the commoner.

3 The Pains—Very severe pains in the bones and joints have usually been described as characteristic of Dengue. In Brisbane and in the Philippines, however, 'breakbone pains' were rare. Manson mentions that one or more pains

very faint, but they believe they saw it in 75 per cent of their cases.

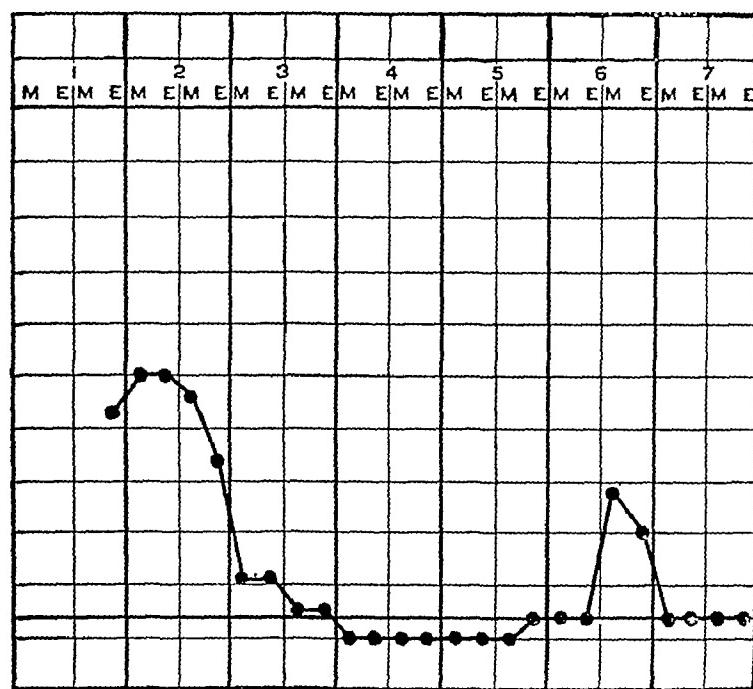
2—DENGUE AND SEVEN-DAY FEVER

There is no denying that these two diseases are clinically much alike. The question is whether the distinguishing characteristics attributed to Seven-Day Fever do or do not come within the wide variations of Dengue. The chief of these alleged differences are—

1 The rapid and widespread character of a Dengue epidemic. On the other hand, it is natural to suppose that in a population to a large extent immunised Dengue may occur sporadically or in small epidemics. It is said to be thus endemic in Syria and Egypt.

2 The persistence of pains after an attack and the occurrence of relapses, which are des-

CHART 5



persist for days or weeks after the attack in a large proportion of cases. Not a single case of such after-pains occurred in the Philippines epidemic, and no mention of this feature is made in the report on the Brisbane epidemics.

4 The Pulse—Is said by Manson to be fast, 120 or more. In Brisbane it was noticed to be slow compared with the temperature, a pulse-rate of 75 to 80 often accompanying a temperature of 102° or 103°.

5 The Secondary Rash—Manson and Setenbe put this as being usually present but in Brisbane it was absent in at least half the cases. Ashburn and Craig are convinced that the rash varies greatly both in the frequency of its appearance and in its character, it is often

observed in connection with Dengue and do not appear in Seven-Day Fever. These, however, seem to be very inconstant in Dengue. Ashburn and Craig, as a result of their observations, came to the conclusion that reports of relapses were very dubious. As regards the after-pains, these same observers and also the Robertson Committee in Australia state that, in young healthy adults, convalescence from Dengue was rapid and uninterrupted.

3 The severe, breakbone character of Dengue pains—This, again, is variable, in the Brisbane epidemic of 90,000 cases, breakbone were met with only occasionally.

4 The character of the temperature chart—The fever in Dengue is generally supposed to

consist of a three-day pyrexia falling to normal and succeeded after two or three days by secondary rise, while that of Seven-Day Fever is continuous with merely a moderate remission in the middle. I think I have shown that both these forms (as well as variations between them) occur in each of the diseases. For instance, the usual type in the Brisbane Dengue epidemic was that which is generally described as characteristic of Seven-Day Fever.

These and one or two other minor points, therefore seem to furnish no sound basis of diagnosis between the two conditions. On the other hand the mode of onset the puffy appearance of the face the injected suffused eyes the general appearance and condition of the patient, the characters of the first and second rashes, the temperature curve the bradycardia, the severe pain in the small of the back, the less constant pain in the limbs, the frontal and orbital headaches the gastric symptoms the character of the tongue the leucopenia, the probable incubation period the seasonal incidence—all are identical in the two diseases.

3 Phlebotomus Fever of the Mediterranean Coast, and its relation to Seven-Day (?) Dengue Fever

This fever has been described in Herzegovina, Dalmatia, Italy, Egypt, Malta and Crete. It is transmitted by an ultra-microscopic organism, as in the case of Dengue (according to Ashburn and Craig), but this organism is transmitted from man to man by the insect *Phlebotomus pappatasii*. The clinical picture seems to coincide exactly with that of Seven-Day Fever. There is a sudden onset with flushing of the face and conjunctival injection. Frontal or orbital headache, pains in the eyes and back and a slow pulse are noted as constant symptoms. A leucopenia, chiefly affecting the polymorphics, was common.

The one point in which this fever appears to differ from those previously described is that a secondary paroxysm is rare and that, naturally, no secondary rash has been described. However, some cases of typical Seven-Day Fever have been described by Lieutenant-Colonel Genaid, R.A.M.C., as occurring side by side with the shorter forms, in Egypt, Seven-Day Fever occurs in the same months as Phlebotomus Fever. As for the Austrian cases, longer cases are referred to by Doeir in such sentences as the following—"Relapses may occur apart from fresh infection, they usually occur shortly after the access of fever, the interval sometimes being as short as 18—24 hours." If such cases had predominated, would not the disease have been named 'Seven-Day,' instead of 'Three-Day,' Fever? This Mediterranean form resembles in the course of its temperature the type of Dengue of the India 1872 epidemic (See Rogers' descrip-

tion), there being a terminal rise in only a small proportion of the cases.

4 Three-Day Fever (Sandfly Fever) of Northern India

There seems to be very little doubt in the minds of observers of this fever that it is the same disease as Phlebotomus Fever. In their descriptions, however, there is abundant evidence of the occurrence of double-paroxysm cases. Among Wall's cases, a few, and among Wimberley's, many such cases occurred. The greatest admixture was in the epidemic among the 15th Lancers, described by Lieutenant-Colonel Fooks, I.M.S. In it, there were 65 of the Three-Day type and 35 of the Seven-Day. The symptoms were exactly as described in Seven-Day and Phlebotomus Fever, and the medical officers who saw the cases had not the slightest doubt that they were dealing with an epidemic of Dengue.

In conclusion, I submit that there is a *prima facie* case for the consideration of these pyrexias as a single disease. The burden of proof rests with those who would have them recognised as distinct and differing entities. Is it not more rational unless and until more than one causal organism are isolated that all these fevers should be included under the one name 'Dengue'?

QUININE WITHOUT TETANUS

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THE question of the administration of quinine is of fundamental importance to a medical practitioner in malarious countries. My experience is that it is one concerning which much ignorance and many fallacies exist, and now Sir David Semple complicates matters, in stating that by giving the drug hypodermically we may conjure up idiopathic tetanus with its terrible train of symptoms.*

The running of any risk at all that can be avoided by a medical man is unjustifiable, and, for this reason, in the case of a dog bite, if there is the slightest doubt as to the condition of the animal, or there is the bare possibility of abrasions having been licked by a rabid animal, I invariably advise a course of Pasteur's treatment. The man, as has been pointed out, runs the risk of a railway accident in getting to the Institute, but this is one of the risks incidental to modern existence, and is probably not much more than the chance of injury in the man's daily routine. But suppose a risk of one in ten thousand or one in a hundred thousand matures and hydrophobia results, the medical man who advised the taking of the odds could never forgive himself. For

* [Sir D. Semple's Memoir is reviewed below.—ED.]

this reason if Sir David Semple has made out his case I should never give a hypodermic injection of quinine without at the same time, as he suggests administering a prophylactic injection of tetanus antitoxin. The expense of this would deprive us of the most useful method of administering quinine in cases of malaria and in other conditions where the malarial element has to be eliminated.

1—Quinine by the Mouth

The salts of quinine usually given require a free acid to dissolve them and as they can only be absorbed into the system when they are in solution such absorption can only take place through the walls of the stomach. As soon as the solution passes into the intestines the drug is precipitated and no further use can be made of it. It at once follows that the only time that quinine can be taken with advantage is when the reaction in the stomach is acid namely, after a meal and best after the largest meal of the day. Only when so taken is quinine in the form of pills of any use at all.

If the usual doses of quinine given often in disregard of this fact cure cases of malaria or are efficient as a prophylactic probably one-tenth of such doses given at the economical moment would suffice, and in India the question of expense can never be ignored.

By no means does all the quinine taken get into the system—the proportion absorbed requires investigation but in my opinion the absorption of one per cent would be above the mark, especially in cases of active malaria where I find I get more certain results by the hypodermic injection of half a gram of quinine on two consecutive days than by the administration by the mouth of say 30 or 40 grains a day.

There is a general impression that it is unsafe to give quinine while the temperature is raised. I can think of no physiological reason for this, but in practice it is certainly not wise to do so as the attendant gastric disturbance often causes vomiting, and will most certainly prevent the absorption of the drug as the stomach will be empty. This rule of practice has assumed a physiological basis and is often incorrectly applied to the administration of quinine in general. When given hypodermically the presence of fever is in no way a contra-indication.

2—Quinine Hypodermically

Since 1899 I have treated all except Dispensary Out-patients, suffering from acute malarial fever by the hypodermic injection of quinine, and in addition during the last five years in order to prevent a possible recurrence of malignant tertian or any fresh infection I have given a hypodermic injection to every patient who

has been anaesthetised just before he comes round and one or two consecutive days to all in-patients suffering from acute diseases such as pneumonia, typhoid fever, small-pox etc. I have generally used Messrs. Burroughs and Wellcome's tabloids containing one grain of quinine hydrobromate. In the twelve months from October 1909 when I was Civil Surgeon at Quetta, the number of injections given must have been between three and five thousand. In Baluchistan a malignant malaria with acute gastric symptoms is prevalent which may be counted upon to recur at inopportune moments. Here on account of expense the solution of quinine bi-hydrochloride was more often used than the hydrobromate. In no case did tetanus result nor inflammation of any sort.

The method of sterilisation used is as follows—For each injection a glass syringe, a needle, a nail brush and two or three swabs are placed on a piece of lint and boiled for five to ten minutes. The lint is then wrapped over the instruments and all are placed in a sterilised towel. If a solution of quinine is being used that is boiled if the tabloids a tea spoon is sterilised. At the bedside a small area of the patient's arm is well scrubbed with the brush and soap, then rubbed with some force with one of the swabs soaked in 1 in 20 carbolic acid and another swab is placed on the prepared spot. A tabloid is then placed in the sterilised spoon ten to fifteen minims of water are poured over it, the whole is boiled over a spirit lamp and the tabloid broken up with the point of the needle. The solution is then drawn up into the syringe and this is placed in carbolic solution until it is quite cool and then injected the needle being at the same time gradually withdrawn so that the fluid is distributed along its tract and does not tear up tissue for itself in one spot. The solution on cooling becomes opaque but this does not interfere with its efficacy. When I first used these tabloids twelve years ago in one or two cases pain and a slough resulted this was in no way due to the quinine but to my anxiety to make the injection before the solution became opaque and was caused by the heat of the water. No such contitemps have occurred since.

The site of injection is afterwards gently massaged with a swab. Occasionally there is slight pain for perhaps a day, but this is the exception.

In the majority of cases of malaria two injections at an interval of 24 hours are sufficient to bring the temperature to normal or in case of other disease to eliminate malaria.

At each injection I never give more than 2 grains of quinine in not more than 20 minims of water. The use of larger doses is to be deprecated as the smaller amount produces the full pharmacological action of the drug.

Of the intramuscular injection I have no experience

3.—*Tetanus and Quinine*

In view of the usefulness of quinine administered hypodermically it behoves every practitioner in India to carefully weigh all that Sir David Semple says in his Scientific Memorandum on "The relation of tetanus to the Hypodermic or Intramuscular Injection of Quinine," published by the Government of India. If his law namely, that the only reliable safeguard against tetanus when quinine must be injected hypodermically is a dose of tetanus antitoxin holds good, then thus application of a specific can only be exceptionally resorted to. acute malaria cannot be cut short till the temperature falls, patients with gastric symptoms must do without quinine until the gastric irritability has disappeared, when malaria complicates other diseases the risk must be run of causing further mischief by giving quinine by the mouth, and for the pregnant woman with malaria the larger doses of quinine must be given by the mouth and her genuine though probably unfounded, fears of abortion calmed as well as may be and if nausea complicates her condition, relief is further off, as few would prescribe antitetanus serum in these cases.

Sir David Semple does not produce a single instance of proof or of anything approaching proof that tetanus has ever occurred in a human being without direct infection, he states as a fact that there are people who harbour in their bodies tetanus spores which may be dormant in a recently healed up wound or abrasion or possibly an old healed up injury, long since forgotten. This is an astounding statement and to carry credence demands the fullest possible demonstration, not a suggestion of such a demonstration is offered except that in guinea-pigs where washed tetanus spores have been injected tissue taken up to seven months afterwards has yielded a growth of tetanus bacilli, and then only when recovered from the site of inoculation. It is not claimed that they can be recovered from other parts of the body nor that when a man becomes infected with dormant tetanus spores, which produce no symptoms that he harbours the spores in anything like the same numbers as are injected into the guinea-pig.

Fournier Pescay's statement that men marching in a hot sun in Spain were attacked with generalised tetanus on the following day is quoted, then nothing was known of the bacillus, and we know nothing as to the conditions under which the men were marching, they may have had no boots, they may have suffered from ulcers on the feet and slept in stables, and the interval between cause and effect seems too short the statement and its quotation is valueless. There are others of similar value. Finally, ten cases of tetanus after the hypodermic injection of quinine are mentioned

as having come under the writer's own notice. Here, realising the importance of the subject, we should expect full details showing that nothing was neglected in the way of antiseptic precautions, that there was no other possible source of infection, such as wounds, abrasions, etc., and that there was no local reaction after injection, showing the entrance of other organisms. Instead of which only one lamentable fact is mentioned, namely, that in one case in the sterilised water used for the injection Semple isolated tetanus bacilli, and even here it is suggested that the quinine was to blame by conducing to the establishment of favourable conditions for the onset of the disease, notwithstanding the fact that bacilli—not spores—had been injected under anaerobic conditions. There is not a particle of evidence to show that tetanus, in any single case quoted, arose in any other than the usual manner.

It is noted that hypodermic injections of morphia are rarely (if ever) followed by tetanus, and that morphia injections are more frequently given than quinine. This is probably not correct. In my own practice I give at least fifty injections of quinine to one of morphia. Vincent mentions one case of tetanus after morphia. And it may be noted that morphia is often given after severe injury where even in the event of the prevention of tetanus the injection would not be under suspicion.

The effect of hypodermic injection of quinine on certain animals is shown a lethal dose for guinea-pigs is one gram in 1 c.c. of water per 150 grammes of weight, when it is realised that in a man of eleven stone this is equivalent to the injection in one spot of one ounce and half a drachm of quinine dissolved in more than sixteen ounces of water the fact loses much of its import. Most of the washed spore experiments were accompanied by a daily injection of quinine, of one-sixth of the above dose equivalent to a daily injection in man of a drachm and a half, in two and a half ounces of water, a dose, I imagine, the most heroic among us would never dream of giving.

Quinine given in large doses causes paralysis of the leucocytes, suspending them from phagocytic activity, small doses are generally believed to increase the number of leucocytes and to stimulate phagocytosis. The point is not yet settled. There may be general leucocytosis and a local diminution of leucocytic activity.

When quinine is given in these large doses to animals, it has an escharotic effect on the tissues at the site of injection with sometimes the formation of a slough, if tetanus spores are injected at the same time, this devitalised tissue forms an excellent site for their development, they do develop and the animal dies from tetanus. But where spores were not injected at the same time, no such infection took place in

any of the experiments, except in one case of suggested intestinal infection, which I will refer to later. The hypothesis is that quiescent tetanus spores are either stored away in certain tissues, where they are 'safe' from phagocytosis, or are present in the neighbourhood of scars where they were introduced but did not develop. Quinine causes an area of dead tissue, and the inert spores finding favourable conditions develop and produce tetanus that have occurred after the injection in man are accounted for.

In the first place, there is nothing to show that quinine in the small doses used in the treatment of malaria as described above has any escharotic effect on the tissues, we will admit it may have to a slight extent. Secondly quiescent spores have never been demonstrated in any animal's tissues, except when previously injected and then only at the site of inoculation. But admitting the slough and the spores, what risk does the patient run of developing tetanus? Considerably less than any person with a small boil before the skin has broken. If Sir David Semple is correct, his law holds good for every one suffering from a boil, he must be promptly injected with tetanus antitoxine.

Tetanus spores exist in the alimentary canal of animals. There, they are as much outside the body as if they were on the surface of the skin, as long as no intestinal ulcer or wound admits them to tissues. Many other pathogenic organisms exist in the intestines. The suggestion that a hypodermic injection of quinine can invite them into the system to cause tetanus has not a shadow of foundation. In all the experiments detailed in the Memon, in only one case did tetanus result after the injection of quinine without the administration about the same time of tetanus spores (*vide Table XVI, No 4*), and here the intestinal tract is assumed as the only reasonable source of infection, but the contents of the intestines had not been examined, so this suggestion entirely lacks confirmation. Tables XVII and XVIII bear upon this point, fourteen guinea-pigs were examined, only one of which was found to harbour tetanus spores in its intestines, and they were non-virulent. To prove that guinea-pig (*XVI, No 4*) may have died as the author assumes from induced tetanus, a simple series of observations suggest themselves, a number of guinea-pigs should be selected that by examination are known to harbour tetanus spores in their intestines, they should then be given hypodermic quinine and watched for tetanus and at the *post-mortem* examination careful search should be made for any lesions of the intestinal tract to exclude direct infection.

The only conclusion that can be drawn from this Memon is that if tetanus spores are injected there is a slightly less chance of a tragedy if quinine is withheld. But nothing has been

shown to justify us in running the risk of withholding the hypodermic injection of quinine in every case where it is indicated provided it is injected antiseptically.

A CASE OF TETANUS TREATED BY CHLORETONE

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In the *British Medical Journal* of November 5th, 1910, a case of tetanus treated by chloretone was described by Ronald A. Hobbs, M.R.C.S. (Eng.) F.R.C.P. (London), House Surgeon Royal Surrey County Hospital Guildford.

I was reading this article about the end of December and on the 2nd of January 1911, the following case was admitted into the wards of the Railway Hospital at Kharagpur. I decided as the treatment of the disease is so very unsatisfactory, to try the drug.

Name	Sanatan	Date of admission--2 1 1911
Age	25 years	" discharge--17 1 1911
Caste	Hindu	Address--Bhooicoonda, near Chailipuri, Midnapur
Sex	Male	Diagnosis--Tetanus
	Single	Result--Cured

The patient was admitted with a history that six days ago he was in perfect health until one morning after having returned home with a bundle of wood, he complained of stiffness of the neck and without taking his food he went to bed. This stiffness got worse and three or four days afterwards the relatives found he had great difficulty in opening his mouth, and when he started getting spasms they brought him into hospital.

On admission the patient's condition was as follows—

There was complete rigidity of the muscles of the neck and trunk. Trismus very marked, the mouth could not be opened for more than $\frac{1}{8}$ th of an inch. The abdominal muscles were rigid and hard as a board. The slightest external stimulus threw the whole of the muscles of the body into a severe spasm. These spasms were very severe and occurred on an average every half minute. Opisthotonus was very marked. Consciousness was not lost and the patient screamed with pain at every convolution. The patient could mumble words if asked a question. There was no sign of any cuts or abrasions.

The patient was placed in a single cubicle and kept as quiet as possible. The first day he was placed on large doses of bromide and chloral without any effect and the next day the chloretone was started.

R

Chloretone
Olive oil

$\frac{1}{2}$ dr.
 $\frac{1}{2}$

In the first dose the chloretone was mixed with olive oil in a pestle and mortar, but it was found that a lot of the drug was left behind in the mortar and so another dose was given, the drug being only stirred up with oil

The patient was given this about 10 A.M., and about 11-30 A.M., he was found to be asleep and on awaking up about a couple of hours afterwards the trismus was very much less, in fact, it was quite easy to give him milk. The patient's spasms came on again on his awaking, but not so frequently and he was more or less under the effect of the chloretone till the next morning. When the spasms were noticed to have become more frequent, he was given another injection. In all 14 injections were given as follows —

2nd Chloretone	20 grs
3rd "	20 "
4th "	20 "
5th "	20 "
6th "	20 "
7th Potass. Bromide and Chloral, as the patient had a very good day	
8th Spasms came on with greater severity and he was given chloretone 30 grs	
9th Chloretone	30 grs
10th "	30 "
11th "	30 "
12th "	30 "
13th "	30 "
14th "	30 "
15th "	30 "
16th "	30 "

Nine doses of 30 grs each and five of 20 grs each—the total amount given being 370 grs. The Assistant-Surgeon was asked to give the injection every day if the rigidity and spasms were noticed to get more frequent. The bowels were cleaned out with frequent soap and water enemas, and this was done, if possible, before each injection.

The most noticeable improvement was in the trismus. The rigidity of the jaws became less and less after each injection, and this enabled us to give the patient nourishment with comparative ease.

In the article in the *B.M.J.* the stupor of the patient became at times very alarming, and so I thought I would try my patient on smaller doses and not give him the large doses as there described by Dr Hobbs. If, however, he had not improved, I would most certainly have increased the dose, but he was doing so well that I saw no necessity for it, as 30 grs was quite sufficient to quieten him down from $\frac{1}{2}$ to $\frac{3}{4}$ of an hour.

His temperature remained subnormal throughout up to the 12th when it went up to normal and then gradually rose to 100°F on the 16th which was the highest recorded temperature.

The case was a very acute one, and the patient had not only to contend against the disease, but it was most difficult to keep him absolutely quiet and free from external excitements. His mother came to the hospital on the third day and insisted

on taking him home and shrieked outside his door and, of course, excited the man terribly and brought on the spasms and rigidity. We refused, however, to let him go out, and every day the same performance was repeated when the Assistant-Surgeon and myself visited the wards. With all these adverse influences, however, the injections of chloretone still continued to improve the patient's condition, until finally on the 14th and 15th the spasms ceased almost altogether, slight spasms being noticed in the muscles of the lower limbs. Trismus was very slight and the abdominal rigidity only appeared at long intervals of 6 or 8 hours.

On the 17th day he was removed from hospital. He then had no rigidity of the abdominal muscles and the trismus was very slight, he could open his mouth almost as wide as normal, but still had slight spasms in the muscles of the limbs occasionally. We tried our best to keep him in hospital, but the mother insisted on taking him home. The relations of the man promised to let us know how he was getting on, but we never expected to see him again, and I was reluctant to publish this case as I had no idea as to how he had done. He, however, appeared at the "out-patients'" on the 28th of April looking fit and well. On enquiry as to how he had got on, he said that he had slight spasms in the legs for a week after he got home, he then commenced to move about gently and in a fortnight he was quite well again. This was confirmed by the man who brought him in.

The following points are, I think worthy of note —

1 The case was a very acute one. The spasms and trismus and opisthotonus being very marked.

2 Except for the chloral and bromide the first day and on the evenings of the 7th and 13th day no other drug was given but chloretone.

3 No anti-tetanic serum was injected.

4 The fact most worthy of attention as Dr Hobbs points out and which I can verify was the relief of trismus, which enabled the patient to take ample nourishment and so maintain his strength.

5 The convulsions were a very marked feature of this case, which is, I think, the only important difference between the two cases. In the note by Dr Sheaf in the *B.M.J.* article, he says that tetanus not only kills by the direct action of the toxin, but by the exhaustion produced by the convulsions, so that I think the drug was given a more severe test here than in Dr Hobbs' case.

I am quite convinced that the man owes his life to chloretone, and I would strongly recommend the drug be given a trial in large towns where tetanus is so rife.

NOTES ON A CASE OF TETANUS WITH
TWO SEVERE RELAPSES AT LONG
INTERVALS

BY LAWRENCE G. FINK, M.B., C.M., (Edin.),

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SEPOY THEJA SINGH, 20 years of age, belonging to the Pyawbwe Military Police Battalion, was admitted into the out-post Hospital, Kamaung, Myitkyina District, on the 30th December 1908, suffering from a severe attack of tetanus. He was an extremely well developed man and spent his spare time in gardening. Cow's manure was being used by him in the garden. On examination by the medical subordinate a small sore was found on the inner side of the left leg, just above the ankle, and a small lacerated wound on the dorsum of the right foot. His temperature was normal, pulse 66 beats per minute. The usual tetanic spasms were severe. The patient was placed in a dark room, the wound and sore having been incised, scraped, cauterised with pure carbolic acid and an antiseptic dressing applied. Inhalations of chloroform were given when the spasms were severe, also an injection of morphia. Twenty grains of chloral with 30 grs of pot. bromide in mixture were given every 3 hours. The medical subordinate immediately wired to me for antitetanic serum, which was despatched at once and reached Kamamg the following evening. At 7 P.M., on 31st December 1908, 20 c.c. of the serum was injected subcutaneously. The spasms had been very severe and frequent that day and continued with but slight improvement the whole of the following day (1-1-09), when one injection of 10 c.c. of the serum was given at 9 A.M. and another at 3 P.M. On 2nd January 1909, one more injection of 10 c.c. was given and chloral and carbolic acid mixture, which was started on 1st January 1909, continued thrice daily. On 3rd January 1909, the number of fits was reduced to about 4 per hour and the patient slept off and on from noon till 7 P.M. when the fits again began to be very severe. At 9-45 A.M. he received 10 c.c. serum and a similar dose was injected at 8-10 P.M. On 4th January 1909, he seemed decidedly better and the spasms were slight. Bromide, chloral and carbolic acid were still continued and mag. sulph. in saturated solution given to open the bowels—10 c.c. of serum was injected at 11 A.M. On 5th January 1909, there were no fits, but the patient complained of agonizing pains all over the body. On 6th January 1909, the patient was very weak, at 7 P.M. he had a rigor and at 11-30 P.M. the temperature was 103.4° F. The serum was now exhausted, one dose of 20 c.c. and 6 doses of 10 c.c. each having been given from 31st December 1908 to 4th January 1909. The severe muscular pains and extreme weakness necessitated keeping the patient in bed. He was

also troubled with constipation for which mag. sulph. was occasionally given. On 19th February 1909 he had severe pain in his left leg and knee joint with loss of cutaneous sensation. The muscles of the leg were flabby and weak. The patient's general health improved steadily but very slowly, and his only inconvenience now was the pain in the left leg and knee and inability to use the limb. There was no recurrence of the fits, so he was transferred to head-quarters, leaving Kamaung on the 23rd April 1909. The last fit had occurred on 4th January 1909, so that the patient had remained free of any relapse for over 3½ months. On the 23rd April 1909, he had a slight fit at night lasting 2 or 3 minutes. On the 25th April 1909, he reached head-quarters, Myitkyina, and when admitted his general health was fair, but he was unable to straighten his left leg due to severe pain in the knee joint, especially on the inner side where it was very tender on pressure. From 9-30 P.M. till midnight he had a relapse of the tetanic spasms which were very severe. Chloral and pot. bromide mixture was given. There were no more fits, but the pain in the leg continued to be severe for the next few days. At noon on 4th May 1909, there was a very severe relapse of fits and these were witnessed by me. The patient was severely convulsed and required six men to hold him down. Chloral and bromide mixture was again given and antitetanic serum wired for. On the 5th, 6th and 7th the patient continued to have frequent severe fits, which were said to have been similar to those he had had at Kamamg. On the 7th the serum arrived and 15 c.c. was immediately injected in the lumbar region. On the 8th the fits were less severe and 10 c.c. serum was injected at 8 A.M. On the 9th and 10th, 10 c.c. was injected each day, but, as the supply had run out, no more was given till 13th and 14th when a similar dose was injected daily. The fits stopped on the 9th after the 3rd injection, but the patient complained bitterly of general muscular pains and especially of the pain in the left leg and knee joint. During this relapse the patient was given one dose of 15 c.c. and 5 doses of 10 c.c. each of serum. The patient remained in bed till the end of May. His general health improved and the pain in the leg very gradually decreased. On 31st May 1909, he was able to straighten and lift the affected leg, but could not bear his weight on it. As the damp weather was now commencing at Myitkyina he was allowed to return to Pyawbwe, the head-quarters of his battalion, where the climate is much drier. When he arrived there, he was admitted into hospital as his left knee and leg were still painful. On the 2nd July 1909, he had another very severe relapse of tetanic fits, requiring about a dozen sick attendants to hold him down. Antitetanus serum was immediately wired for, and the first dose of

10 c.c. was given to him on the evening of 5th July 1909. The next day two injections of 10 c.c. each were given, and after these the fits ceased. On 7th July 1909, he received two more injections, 10 c.c. each, and one similar injection on 8th July 1909. In this relapse the patient received in all six injections, each 10 c.c. On 5th August 1909 the patient, who had been free of fits, was granted six months' sick leave to India, and on 8th December 1909, the Medical Subordinate, who treated him at Pyawbwe (S. M. Rudia), informed me that he has heard that the patient is keeping good health and has had no more fits. This relapse at Pyawbwe occurred nearly two months after the 2nd one at Myitkyina and six months after the original attack at Kamaing.

This case has several interesting features. The sore above the left ankle was probably the seat of inoculation and was probably at first the "local manufactory of the poison." By free incision, scraping and application of carbolic acid, an attempt was made to destroy the bacilli at the probable site of inoculation, but this was either not completely successful or some bacilli had continued to exist and produce toxin in some other part of the body. In other words, the bacilli may possibly have been destroyed in the wound, but some became localised elsewhere. In the *Lancet*, dated 29th January 1910, page 314, reference is made to the investigations made by Drs. Porter and Richardson, who actually found in two cases of tetanus, due to wounds on the foot, that some of the bacilli had travelled upwards and were lodged in the inguinal glands. This discovery has led them to advise that the infected glands should be excised in addition to the usual antiseptic treatment of the primary focus. The severe pain in the left leg and knee joint are suggestive that infection of the popliteal glands may have taken place in the case now reported, but of this I have no proof. The subsequent relapses were preceded by an increase of pain in these parts and there was tenderness, but no swelling, in the region of the left knee, especially on the inner aspect and behind. The infection of glands has to be borne in mind and unless these are excised, relapses are likely to occur, however thoroughly the primary focus is attended to when the tetanic symptoms have commenced.

In regard to the treatment with antitetanic serum, the result was most gratifying, and the patient's life was no doubt saved by the injections he received. Dr. Lagane's views on the present position of antitetanic serum therapy have been quoted on page 109 of the *Indian Medical Gazette* of March 1910. In the case now reported the probability is that the serum injections were not in the first instance given long enough, and should have been continued for

some time after the fits had ceased. If the antitoxin acts merely as an antidote to the toxin circulating in the blood and has no effect on the toxin fixed in the nerve cells, there cannot be much use continuing the injections after the spasms have ceased, but what should be done to prevent relapses?

Lagane concludes that the antitetanic serum in man has a possible curative action. It has no effect on the tetanus bacilli localised at the point of inoculation, and therefore none on the bacilli in glands near the primary focus. The antitoxic action of the serum is said to be entirely temporary and its effect does not last more than a week. How then are relapses to be anticipated and prevented?

Carbolic acid is said to have a specific action as an antidote to the tetanus toxin, attacking it in the circulation. It has, however, been noticed that when the injections were interrupted the tetanic symptoms reappeared and were at once relieved by resuming the treatment. It is regarded as a useful accessory to antitoxin medication (Medical Annual, 1909, pages 575-6). In the case now reported carbolic acid was one of the drugs used, but it would be useful to have some definite information as to how long this drug should be continued, with or without antitetanic serum, to prevent relapses such as those which occurred in the case reported.

The present case also leads one to enquire as to why the relapses were so long delayed? The first relapse took place 3½ months after the cessation of the original attack. If the antitetanic serum and the carbolic acid, both of which were discontinued when the fits stopped on 5th January 1909, had destroyed the toxin circulating in the blood, they had no such effect on toxin fixed in the nerve cells nor on any toxin subsequently produced. The answer is probably to be found in the theory advanced by Tizzoni and Cattani who maintain that the antitoxic serum has the power of enabling the tissue cells to continue their work in the presence of larger doses of the poison. Roux and Villard further maintain that if the dose of the toxin is too large or too frequent, the antitoxic property of the blood may disappear for a space and the blood actually become toxic (Allbutt's System of Medicine). This view is opposed to Behring's who maintains that the antitoxic serum directly destroys or antagonises in the blood the toxin formed by the tetanus bacilli, and this appears to be the opinion of Lagane whose theory does not help us to explain why the relapses in the case reported did not occur earlier, and were deferred for such long periods as 3½ and nearly two months, the incubation period of tetanus being only 1 to 22 days. According to Dr. Purves Stewart the toxin seems to be absorbed primarily by the muscle end-organs, and is transported along the

axis cylinders of the nerve fibres up towards the spinal cord. It is only slightly absorbed into the general circulation by lymphatic channels (Medical Annual 1908, pages 568-9). It has also been recently pointed out by M. Jean Troisier and M. Georges Roux that the tetanus toxin has been found localised in the upper part of the floor of the fourth ventricle containing the masticatory nuclei, and thus explaining the early onset of trismus. As the major part of the toxin appears to be fixed in the nervous tissues, Behring's theory would not explain the total destruction of the toxin by antitetanic serum, and the subject therefore calls for further investigation in the light of relapses occurring after long periods, as in the case now reported.

A CASE OF MALIGNANT CEDEMA

BY R. F. D. MACGREGOR, M.D.,

LIEUT., I.M.S.

Gyantse, Tibet

T., a Tibetan male, aged 37, was admitted to the Civil Hospital, Gyantse, Tibet, on 15th June 1911, suffering from a large lacerated wound of the left hand. The history was as follows — He was a competitor in an annual festival here, one of the items being a gun-firing and arrow-shooting competition. Each entrant had to gallop to a target, fire his gun at it, then gallop to the next target at which an arrow had to be shot. It was noticed that the patient after firing his gun was unable to continue, his friends saw that something was wrong, and on examination found that his gun had exploded. They bound up his hand and brought him to hospital.

On admission he had a very large wound of the left hand, the index finger was broken and dislocated. The deep tissues of the palm were exposed, there was much bruising and tearing of muscles and considerable loss of skin. Bleeding at first had been free, but had been checked by brachial pressure and the application of a piece of the patient's clothing as a bandage. The patient's general condition was fairly good. The wound was cleaned thoroughly and patient put to bed.

On June 16th under chloroform, the wound was thoroughly explored, and the index finger amputated at the metacarpo phalangeal articulation. The patient stood the operation well. Two hours later his temperature was 99°F. In the evening there was no further rise of temperature. The wound looked healthy, and the patient expressed himself as feeling quite comfortable.

On June 17th, the wound presented a healthy appearance there was some oozing from the wound but no swelling of the arm. The hand was kept all day in an arm bath. At 6 P.M. the temperature had risen to 102°F., but there was no

apparent cause for this. At 10 P.M. patient fell asleep and was reported as being better. At 3 A.M. next morning his attendant noticed that the patient's face was twitching and that his arm seemed to be swollen. They sent for medical assistance, but before that could arrive the patient was dead.

There was considerable swelling of the left arm, which was in places of a brownish colour here and there the skin was raised in blebs. The wound of the hand still appeared fairly healthy.

Microscopical examination — A film of exudation from the wound was examined microscopically and found to show numerous organisms of various kinds. A few were cocci indistinguishable from streptococci and occurring either singly or in short chains. By far the greater number were bacilli, some of which were short rods, but many were of considerable length, while a few showed branching. One or two presented an appearance of spore formation, others had a drumstick termination; these were probably putrefactive anaerobes.

Inoculation Tests — A little of the exudation from the wound was injected into a field mouse which died in five hours. The animal's body had a peculiar putrid odour and the organs of the body were softened. A film of heart blood showed cocci and bacilli; some of the latter were straight rods, others were branched, while some were very long spiral filaments with knobbed extremity. The organisms were Gram negative.

Unfortunately cultivation was impossible here but from a consideration of the symptoms and microscopical appearances, there seems little doubt that the case was one of malignant cedema.

The chief points of interest in the case were firstly, the great virulence of the infection and, secondly, the question of the source of the poison. The most probable source in this case was the dirty clothing used as bandage, aided by the bruising of muscles. Tibetans are very fond of having a mud paste applied to their wounds; this may be the explanation in some cases, but there was no trace of such an application in this instance.

ON THE NATURE OF THE EPIDEMIC FEVER IN LOWER BENGAL COMMONLY KNOWN AS BURDWAN FEVER (1854-75)

BY U. N. BRAHMACHARI, M.A., M.D., PH.D.

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(A paper read at the Medical Section of the Asiatic Society of Bengal, April 1911.)

THERE has been a vast literature on the subject. We shall not enter here into a discussion of the origin of the epidemic. The consensus of medical opinion was in favour of the disease being of a malarious nature. There was a number of cases regarding which

a difference of opinion existed, namely, cases in which the fever was more or less of a continued type. These cases constituted the *Jor Bilar*. Some observers thought that these were instances of true typhus (Verchere and Jackson). Jackson subsequently believed the disease to be typhomalarial fever. Greene thought the disease to be typhoid in nature. Lyons thought it to be relapsing fever. Roy, French and Wilkie thought that they were cases of ague in which the apyretic intervals had disappeared. Quite recently, Major Rogers has pointed out that the Burdwan fever was precisely similar in nature to the epidemic of Kala azar in Assam. He points out that a few cases terminating rapidly with coma, and doubtless due to cerebral malaria were naturally regarded as part of the epidemic. Lastly, Christopher and Bentley have doubted as to the Kala azar nature of this epidemic.

As the study of the epidemiology of malaria constitutes a part of the investigations with which the provincial medical committees are concerned, the following paper is communicated to show that the Burdwan fever was in fact at least, an epidemic malarial fever, i.e., malaria causing, like plague or small pox or cholera, an epidemic rise in the death curve. I shall not enter in the present paper into the study of the meteorological and physiographical conditions under which the terrible epidemic broke out.

In the *Imperial Gazetteer of India*, Hunter points out that the real Burdwan fever proved fatal within one or two days. In Buckland's *Bengal under the Lieutenant Governor* the epidemic has been described as a congestive remittent fever running its course to a fatal termination, usually with great rapidity. Such cases were far from uncommon, especially in villages newly affected. Roy states that in such places death from cerebral complications were common, where after a suffering of four or five days, it was not uncommon to find people struck down with convulsions, coma and death. According to him, the first attack always proved to be of the continued or remittent type of fever which was looked upon as dangerous. French points out that in one year, 10 per cent of the population of Burdwan had been carried off within two months. In Mahachanda, a village about 7 miles to the north of Burdwan, about one sixth of the population died in two months (Saunders). Elliot states that the mortality from sudden and great depression of the vital energies was very great in some of the affected places. Gupta wrote that if the first attack of the fever was at all severe and if not checked by prompt and early treatment, it ended in death. The early treatment referred to was treatment by quinine.

In Pindopah where the disease spread to in 1862, upwards of 1,200 people died within six months (Elliot). Pillow similarly pointed out that on the first outbreak in a village the disease was of a very rapid and mortal type. The Army Sanitary Commissioner stated in 1872 that the fever was one of the worst pestilences on record, having in a few months cut off 70 per cent of the population of some of the affected villages. The Inspector General of Civil Hospitals in his report on the Charitable Dispensaries under the Government of Bengal for the year 1871 stated that the mortality in one outbreak amounted in a few months to one third the original strength of the community.

The terrible mortality which depopulated Purbushlee and its adjacent villages in 1862, as mentioned in the petition made by the inhabitants of the place to the Government in the same year, must have been due, to a great extent, to attacks of fever of a similar nature.

I consider that the large majority of cases that died in Oolah or Beernagoi must have died of fever of a similar nature. Here, according to Elliot, 10,000 people died in five years time out of a population of 18,000, while, according to other calculations, the mortality amounted to 17,000. It is stated that, at the beginning of the epidemic (1862), nearly 100 persons used to die every day in Oolah. Houses containing healthy indi-

duals in the evening contained none but dead bodies the next morning. People who went to burn the dead came back ill of fever and died within a few hours. The number of dead were so very great that there were none to remove them, and houses were found full of decomposing dead bodies of whole families.

I consider that the disease which, according to the *Indian Medical Gazette*, 1873 (Vol VIII), converted some parts of the districts of Burdwan and Hooghly into a "valley of the shadow of death" into which if any human being, whether robust or weakly, well nourished or the opposite, entered, he was almost certain to get an attack of fever and get a very severe one, and he might consider himself very fortunate if he escaped out of it with life, must have been, to some extent at least, due to malaria. It is questionable whether the fever that, according to Ward, affected every native in Burdwan, and afterwards, according to Metcalfe, every human being resident in the town and which, according to Payne, affected the rich and poor alike, was all Kala azar. On the other hand, the disease that, according to Jackson, recurred in the same houses from year to year was more likely to be Kala azar.

The Epidemic Commission in 1864 described the deadly forms of the diseases as follows—"The disease is characterised in its deadly form by great general prostration, cerebral congestion and early collapse from which the patient, having no power to rally, is cut off in 36 hours to four or five days. During a first attack the head is the seat of congestion. The eyes are bloodshot and aching, the face is suffused, delirium early ensues and collapse terminating fatally in a few hours closed the scene. Next in urgency to the cerebral symptoms, we have to deal with a highly congested state of the thoracic viscera and with great difficulty of breathing, the air-tubes become loaded with mucus and death finally results from asphyxia." According to French, one common and dangerous form of Burdwan fever was that, after a few days of continued fever violent vomiting and purging set in, followed by collapse and in some cases death. In other cases that proved rapidly fatal, the symptoms varied very little from those of cholera. He describes three types of Burdwan fever—"the ordinary ague, which may be quotidian, tertian and quartan, the mild remittent, and the malignant remittent." "The malignant remittent is the really fatal fever in Burdwan, although the mild remittent, by becoming congestive, may prove rapidly fatal." Greene points out—"There would appear to be two forms or aspects of the fever, viz., first, the virulent congestive form, remittent at first, with extreme prostration, with typhoid adynamic symptoms contagious and very fatal, the second, the intense malarial intermittent with enlarged spleen and liver and protracted blood contamination, the one form relapsing, contagious and very fatal and not amenable to quinine, the other an intense intensified intermittent with extreme prostration of the vital powers during the cold stage of collapse, and contagious and curable by quinine." A similar account of acute cases of continued fever is given by Jackson. He states that "these acute cases are numerous enough, they constitute the fever."

I would now quote here a few charts from French's paper which, I consider, is one of the very few works that gives the temperature charts of the fever. As the book is extremely rare, I make no hesitation in reproducing some of his charts here.

It is evident that most of the acute types of the fever described above bear little or no resemblance whatever to Kala azar, either epidemic or sporadic. There can be no doubt that these were cases of intense malaria, which must have occurred as an epidemic in some of the affected places.

The pestilence that devastated Burdwan, or Purbushlee or Oolah must have been due to a great extent to an epidemic malarial fever. It would not, therefore, be correct to say that malaria did not form a part of the epidemic of Burdwan fever. It

impossible to say what proportion of the fever was due to malaria, but it certainly constituted a large proportion of the cases that died during an acute attack. It is possible that part, at least, of the epidemic was due to an epidemic manifestation of endemic malaria that doubtless existed in Lower Bengal before the days of the epidemic. It is easy to understand in the present day, how endemic malaria became epidemic by the gradual silting up of the natural drainage outlets of a well drained, healthy and prosperous tract of country. This must have occurred in Lower Bengal in the days of the epidemic, as Payne and Smith suggested in the seventies.

The endemic disease must, however, have been very mild, before the days of the epidemic, in many of the places that were subsequently terribly affected specially Burdwan. Before the days of the epidemic the district of Burdwan was noted for its healthiness, and the town of Burdwan was regarded as a sanitarium. It was even customary for persons suffering from chronic malaria to go to Burdwan where cures from the disease were common.

The census report for 1881 states that quarter of a century ago the district was considered one of the most salubrious in the province. If we turn to Hamilton's account of the district, we find that three quarters of a century previous to the epidemic "there were few villages in Burdwan, in which there was not a school in which children are not taught to read and write, there is no portion of territory in Hindooostan that can compare with it for productive agricultural value, in proportion to its size, it appears like a garden surrounded by wilderness." "Similarly the census report of the Nadia district for the year 1902 speaks of the district as "once famous as a health resort," though doubts have been thrown as to the correctness of this statement in the Bengal Gazetteers.

It would thus appear that cases of true malaria were few and far between in the Burdwan district before the days of the epidemic. The history of the malaciousness of the district is to be traced to the epidemic of the Burdwan fever.

That not an inconsiderable number of cases in the Burdwan epidemic were purely cases of malarial origin is also proved by the fact that they got benefit, however temporary, from quinine. Dr Roy thus writes "The reputation which some of the quack medicines have attained in the cure of fever is owing to their containing quinine in fair proportion."

In Jamalpur, a pundit made his fortune by selling a mixture of his own composition and so much as 100 bottles per day were sold in the fever season. Dr N. Gupta's mixture received a very encouraging support. The attendance at and reputation of a dispensary in the endemic district depended merely upon the quantity of quinine given than upon the skill and attention of the medical officers. Thus the daily attendance in one dispensary rose from 30 to 400 directly quinine was supplied for distribution.

Chevers writes that all reliable facts that he was able to obtain combined to show that the Burdwan fever originated as a simple malarial fever quite amenable to quinine and ordinary treatment when taken in time.

There cannot thus be any doubt that a large number of cases of Burdwan fever were benefited by quinine. Another large number derived no benefit from the drug, which sometimes did harm. Thus Elliot pointed out that in acute cases the drug was useless and even harmful and tended to increase internal congestion. He further points out that intercurrent with the epidemic disease there were many cases of the ordinary endemic fever in an intensified form more or less amenable to quinine, but certain to recur at some periods within a month and as certainly followed by enlargement of the spleen.

It will thus be seen that the Burdwan fever was partly an epidemic malarial fever, i.e., malarial fever

causing a great rise in the death curve. The relapsing cases were also partly cases of chronic malaria. The chronic cases that, according to Elliot and others, got marked benefit from quinine or were cured by change of place must have been cases of true malaria. On the other hand, those that suffered from recurring attacks of fever and in the long run had enormously enlarged spleen and liver and were not benefited by quinine and finally suffered from oedema of the extremities and cancrum oris were very likely cases of Kala azar.

If we study the sequelae of the Burdwan fever, this fact becomes evident. Roy describes them as follows: "The first and most frequent in order is enlargement of the spleen. It varies considerably in size, from being just perceptible under the costal cartilages to filling up the whole abdomen. From a distance the pot bellied feature with distended veins on the surface of the abdomen gives an appearance of dropsy. There may be enlargement of the liver. There may be obstruction to the portal circulation ending in ascites. There may be large prominent veins on the surface of the abdomen. Diopsy is the sequela with which these cases take a fatal turn."

The lean emaciated limbs and haggard countenance seen on a bloated trunk gives a most unsightly appearance. Unless timely treated with tonics and nourishment, cancrum oris makes its appearance and puts an end to the patient's miserable existence. It is frequently accompanied with dysentery. There is a watery state of the blood and there may be hemorrhagic dia thesis. Bleeding from the nose and gums is a very common complication. There may be bleeding from the mouth or rectum."

Having attempted to prove from clinical evidence that the Burdwan epidemic was to a great extent one of malarial origin, I pass on to show the same by comparing the mortality curve from fever in the district of Burdwan during the epidemic with that of Goalpara during the Kala azai epidemic in the latter district. If we compare the two curves, we find the following differences—

(1) In the Burdwan epidemic, the mortality was lowest about June. In Goalpara the highest rise in the mortality curve was generally in June and sometimes in December. In some years there was a double rise, one about June and another about December. In the Burdwan epidemic the largest mortality was about December.

(2) There was a very high rise in the mortality curve every year in the Burdwan epidemic about December, while in Goalpara it was very high every month. The proportion of the highest to the lowest mortality was 12 to 1 in the Burdwan epidemic, while it was less than 2 to 1 in the Goalpara epidemic.

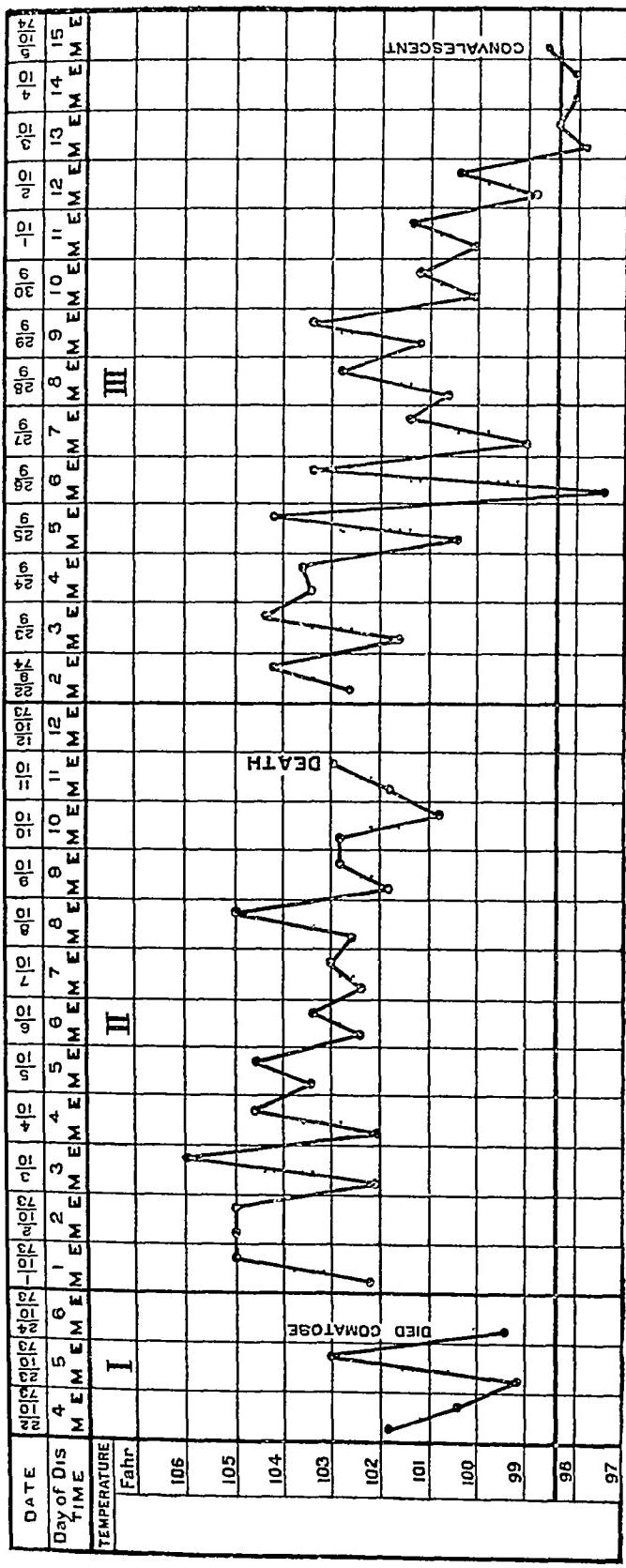
(3) The period of the highest mortality in the Burdwan epidemic was exactly coincident with that of the highest rise in the malaria curve in Bengal, i.e., about December.

It is thus evident that there was an epidemic of two diseases during the outbreak of Burdwan fever. The severe cases described by French were mostly cases of malaria (probably malignant tertian fever), while those that constituted the large majority of cases observed by Jackson were cases of Kala azai. In most cases the two diseases travelled together, but not always so. Jackson thought that the disease travelled along roads and lines of traffic and intercommunication. On the other hand, French thought that the disease extended chiefly and was worst along rivers, khals, and streams. To day we can reconcile both these views, French was concerned mostly with cases of epidemic malarial fever, while Jackson's cases were mostly cases of Kala azai.

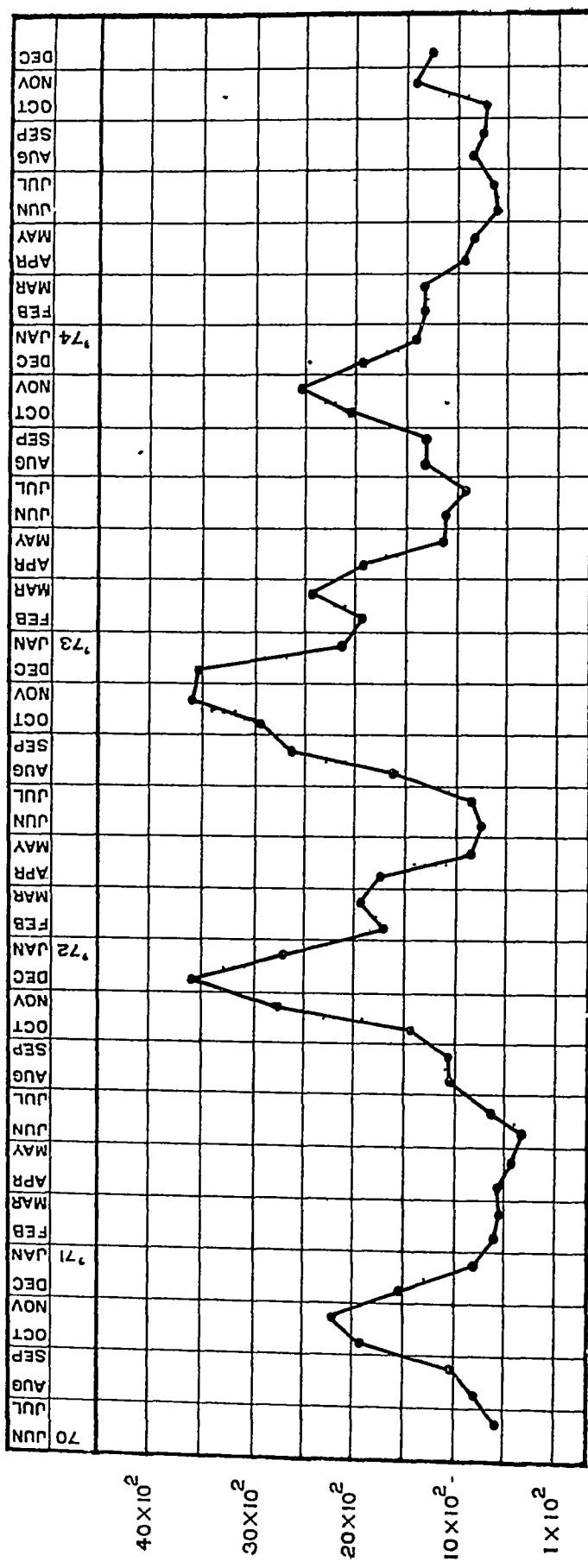
The effect of the epidemic of the Burdwan fever on the health of the district is an interesting study. At the present day the district of Burdwan is notorious for malaria. There are also cases of Kala azai that come to

ON THE NATURE OF THE EPIDEMIC FEVER IN LOWER BENGAL, COMMONLY KNOWN AS BURDWAN FEVER (1854-75)

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Three Cases—Temperature Charts

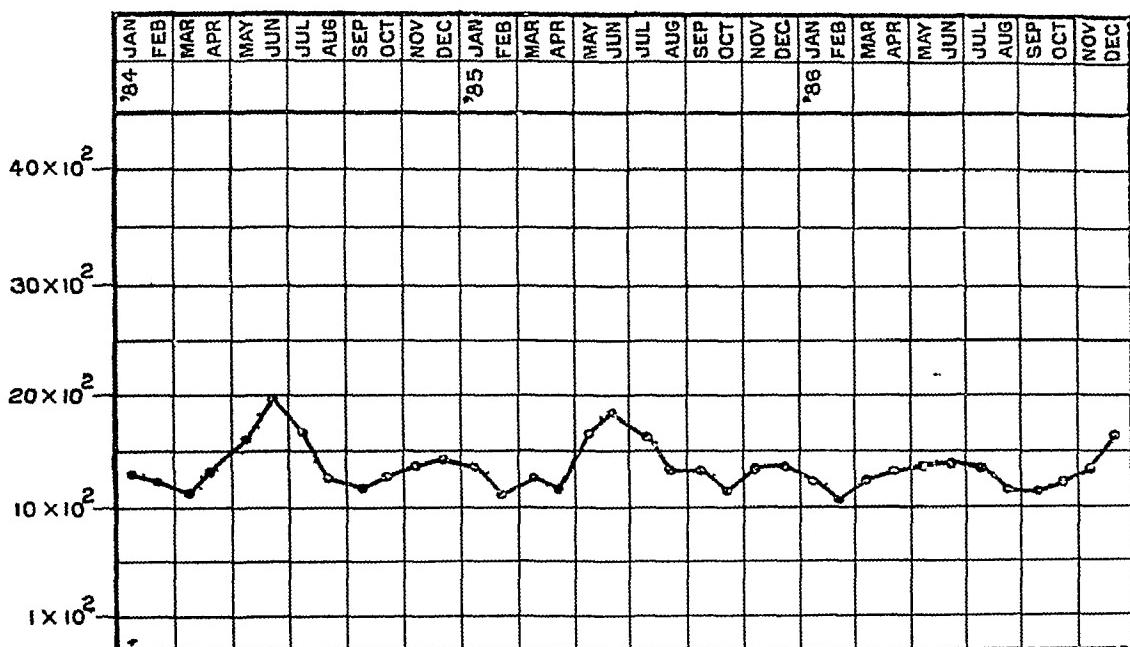


ON THE NATURE OF THE EPIDEMIC FEVER IN LOWER BENGAL COMMONLY
KNOWN AS BURDWAN FEVER (1854-75)

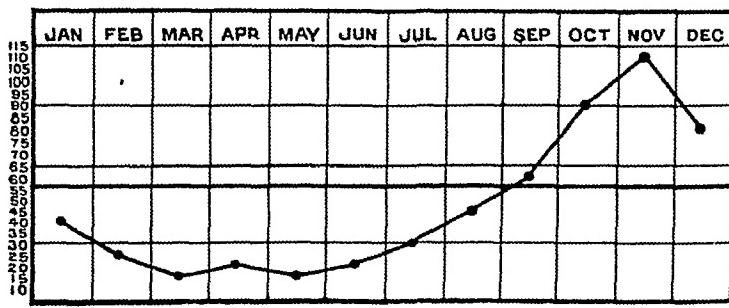
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(A paper read at the Medical Section of the Asiatic Society of Bengal, April 1911)



Mortality curve from Fever in Goalpara district during the Kala azar Epidemic



Seasonal prevalence of Malaria in Bengal (Rogers and Megaw's Statistics)

us for treatment. Thus the effect of the epidemic was to convert the district into a highly malarious one.

There is thus much truth in what French wrote that the Burdwan fever "differed only in degree or virulence from the ordinary autumnal malarious fevers of Bengal." Whether Kala azar appeared as a new disease in Burdwan during the epidemic, or whether it appeared as an epidemic manifestation of a sporadic disease, must always remain a mystery.

The epidemiology of malaria seems, therefore, to have been closely connected with that of Kala azar in the Burdwan epidemic. This fact is not purely of academic interest but will be of greatest value to those who are concerned with the study of Epidemiology of Malaria in Bengal. Whether there was a causal relationship between the two diseases is a subject of the greatest interest to the scientific enquirer.

In conclusion, I would express my deep indebtedness to Mr P. Dias of the Imperial Record Office for furnishing me with many publications in connection with the Burdwan Epidemic.

BURDWAN FEVER

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A Mirror of Hospital Practice.

THE TREATMENT OF GRANULAR OPHTHALMIA AND ITS COMPLICATIONS BY THE SUB CONJUNCTIVAL INJECTION OF A SOLUTION OF CYANIDE OF MERCURY

By R H ELLIOR, M D (LOND), FRCs (ENG), etc,
MAJOR, I M S,

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LIEUTENANT-COLONEL HENRY SMITH, in a paper read before the Bombay Medical Congress, recommended the sub-conjunctival injection of cyanide of mercury solution for the relief of trachomatous conditions. He repeated that recommendation giving his technique in detail in the August number of the *Indian Medical Gazette* for 1910 and advocated the method so strongly that in spite of its condemnation in the past by others, I determined to give it a thorough trial. Lieutenant-Colonel Smith's instructions as to dose, site of injection, concentration of solution, technique, and repetition of the injections were all closely followed. In this connection it is of interest to state that in this Hospital the Senior Assistant, Lieutenant Craggs, who carried out the treatment of these cases, gives over 2,000 sub-conjunctival injections of normal saline solution in the year for the relief of various morbid conditions. The fact that we have never had a single case of inflammatory reaction following these injections is, I think, sufficient to show that the complications we met with in this series (*vide* below) were due to the drug and not to any fault in the method of administration. In each eye which appears in this series the site distribution of the granules was very carefully noted. The number in each locality was counted and a careful note was made of the condition of the cornea. The vision was estimated at intervals and frequent careful notes were made whereby the progress of the case could be accurately watched. I am very much indebted to Lieutenant Craggs for the care with which the notes were made and for the close attention he gave these cases. I may add that he showed the patients frequently to me in order that I might make myself personally responsible for the accuracy of the observations made.

For the experiment six patients were chosen who were suffering from trachoma in both eyes. We endeavoured to select cases in which the diseases had attacked both sides to much the same degree. As this was not wholly possible, we selected the worse eye in alternate cases for the exhibition of Colonel Smith's methods and of our own. That is to say, in one patient the worse eye was reserved for the cyanide treatment, while

the better eye was treated by the usual treatment of Rollei forceps, the application of silver nitrate, etc. In the next patient we received this order, giving the better eye the cyanide treatment and the worse eye our routine treatment. Three of our patients were of European extraction and three Hindus. The ages of the former were 10, 15 and 15, of the latter 11, 12 and 45 respectively. Two patients had only one injection each. In one of these (a Hindu, male, at 45), the result of the injection was a grave exaggeration of the pannus, making us very anxious for the future of the eye. This was accompanied by severe reaction in the lids. At the same time the granules did not disappear and distinct ptosis manifested itself. Even at the end of four months it was obviously unsafe to interfere with him any further. In the other case the conjunctival reaction was so severe as to lead to dense scarring which remained for nearly five months, in fact, as long as the patient was under observation. We did not feel justified in repeating the treatment. He too developed ptosis. One patient had two injections. She was a Hindu female who absolutely declined to come into hospital again until we promised her that the injection treatment would be dropped. The suffering she had endured had frightened her out of all reason. Apart from the question of pain, the cyanide injection had a very unfavourable influence on her pannus, the cornea becoming widely vascularised and showing an increased tendency to yield. She also developed ptosis in the injected eye. One patient, a European boy, had three injections and then begged to be put on Roller forceps for the cyanide eye in order that it might be cured, as the first one had already been by the Rollei forceps treatment. He complained most bitterly of the pain of the injection. Two patients had four injections each. Both were aged 15 and of European extraction. One was kept under observation for two months, and at the end of that time the eye which had been injected with cyanide still showed granules, though they were less prominent than before, whilst the opposite eye had been cured by Rollei forceps. The corneal condition had distinctly improved under injections. At the patient's request the injected eye was treated with Rollei forceps in order to let him get cured and return to his home. The last case was kept under observation for over six months. At the end of that time the granules were still prominent, but the corneal condition had been greatly improved. Roller forceps were applied to end the case. On his return to hospital before the application of the Rollei forceps, he was noticed to be suffering from marked ptosis in the injected eye. Our conclusions may be summarised as follows—

(1) Contrary to what Colonel Smith has suggested, we did not find that the injections exer-

cised any specific influence whatever over the granules on the palpebral conjunctiva. Apart from this, it might have been expected that the violent reaction set up would have led to atrophy of the granules. Even this expectation was not satisfactorily realised. It will be observed that after giving so many injections we had to fall back in three cases out of six on Roller forceps and silver nitrate treatment in order to restore the conjunctiva to a normal condition.

(2) The influence of the injections on pannus and the corneal conditions allied to it was not as satisfactory as one could have wished. In two severe cases the vascularisation of the cornea was unfavourably affected as has already been shown, whilst in two cases of less severe corneal trouble the injections proved of decided benefit but against this it is to be remembered that in both these cases the corneal condition of the opposite eye cleared up equally well under treatment of the lids alone by Rollei forceps and silver nitrate. A review of our notes leads us to the opinion that in severe cases at least a careful penotomy is greatly superior to the cyanide injection, inasmuch as it is both safe and certain in its action. We can hardly say the same of the injection method. (3) The cyanide treatment is open to other and grave objections. Firstly, the pain after injection is extremely severe. One and all of the patients complained most bitterly of it, and expressed a strong preference for the Rollei forceps method of treatment. It must not be forgotten that penotomy is but rarely required in our régime and then only for the cure of obstinate pannus which will not yield to routine treatment alone. For this reason the comparison instituted between our methods excluding penotomy and Colonel Smith's routine method of injection is, it is submitted, a fair one. Secondly, the local reaction to which it gives rise is not always negligible. Two of our cases suffered considerable pain and discomfort thereby and that for a period of several months. Thirdly, in four cases out of six marked paresis of the levator palpebrae supervened. At first sight it would seem that the superior rectus should have shared in the weakness, whereas it did not. The explanation is apparently to be sought in the fact that the superior rectus muscle lies under cover of Tenon's capsule and is consequently much less exposed than the levator palpebrae is to the inflammatory action provoked by the drug. In the absence of an autopsy it would be hard to say whether the paresis was due to a lesion of the nerve endings or of the muscle fibres, but it is unquestionable that we have to do with a paresis and not with a mechanical obstruction to the lid movements. Our experience has been so unfortunate that we have definitely abandoned the cyanide injections. It does not seem justifiable to give them any further trial, the more so as the generally

accepted methods of treatment give such excellent results and do not involve serious risk of any kind to the patient. In the Government Ophthalmic Hospital, Madras, we have for years used the Rollei forceps combined with the use of silver nitrate, copper sulphate, yellow oxide of mercury and dionine, etc. For pannus which does not yield to the treatment of the lids we rely on a carefully performed peritomy. Adrenalin is avoided, and we tear through all the deep vessels which can be seen entering the cornea from the episcleral and superficial structures.

There are one or two other points to be considered. Lieutenant-Colonel Smith recommends the use of a 12.5 per cent solution of silver nitrate (60 grains to the ounce). Fuchs, in his invaluable text-book, gives a warning against the use of strong solutions. He says "We can always succeed with a two per cent solution, since we have it in our power to regulate the effect by making a light or a penetrating application with the brush." Boldt, in his text-book on Trachoma quoted below, says "The danger of the use of silver nitrate as a caustic, even in the form of the mitigate stick cannot be sufficiently emphasised. Much damage is brought about by these cauterisations, and the scarring which follows them. An astringent, rather than a caustic, effect is to be aimed at, the inflammatory condition being restrained. Hence we recommend silver nitrate in 2 per cent solution only." With these opinions we believe that most surgeons of experience will agree. In certain cases (with exuberant granulations) Colonel Smith recommends, "Scraping them with a knife so as to clean the cartilage and then painting the affected area with nitrate of silver." This method has at least the sanction of antiquity. Hippocrates scraped off the granulations and subsequently cauterised the part, and Celsus arose to protest against the abuse of the method. Paulus of Aegina attacked the granulations with a raspary and so it has been through the ages. The pendulum has swung this way and that, but Boldt of Prussia probably summarises the great bulk of modern opinion correctly when he says, "Scalifications is not to be recommended, on account of the injury inflicted upon the conjunctiva." The motive of modern treatment is to be found in his words, "to produce the most rapid and complete destruction of the follicles with minimum injury to the rest of the conjunctiva whilst also avoiding undue scarring." In conclusion one may be permitted to recommend to all who have not read it the careful study of Boldt's book on Trachoma which, though it was published in 1904, is still full of valuable information (Trachoma by Dr J. Boldt Translated by J. H. Parsons and T. Snowball and published by Hodder and Stoughton, London). One last quotation from him may be admitted in conclusion—"Sub-conjunctival injections, which raised great hopes for a time,

have not proved satisfactory. Besides being very painful, they often caused the development of fibrous nodules, without succeeding in eradicating the supposed microbes in the tissues. On the other hand, the combination of mechanical treatment with antiseptics seems to be advantageous, causing deeper penetration of the drugs."

TREATMENT OF LOCAL SORES BY CARBON DIOXIDE SNOW

By W. W. JEUDWINE, M.B.,

CAPT., I.M.S.,

Civil Surgeon, Multan

THERE have been lately two articles in the Gazette regarding the use of CO₂ Snow, and as this method of treatment is comparatively recent, I venture to give you the results of my experience during the last three months, feeling sure that this method will become universally adopted as it becomes more widely known.

Preparation of the Snow—It is unnecessary for me to enter into a detailed description of the preparation of the Snow as that has already been done in your columns, but there is one point about the collection of the gas from the cylinder which may be of use. From experience I found that the preparatory use of a roll of paper swathed in bandages and a towel was not satisfactory. The roll of paper could easily be made too large or too small to fit over the orifice when the gas escaped—in this case gas either escaped in large quantities or the roll would not fit on and necessitated remaking.

Again, the slightest kink in the roll of paper caused the gas to solidify at that place and often caused the roll to be left half empty. Instead of this method I had a metal foil pipe made, costing 4 annas, it is the same length as a piece of foolscap paper.

One end is made so as to fit easily over the brass knob when the gas escapes, and the other end is slightly larger, into this when in use is put a roll of foolscap paper and the tube adjusted to the cylinder. A cork is placed in the top end, a pad of cotton-wool applied, and a hand towel wrapped round. Gas is quietly and easily collected in solid form, little is wasted, and no elaborate preparations are necessary.

We have made the CO₂ Snow during May and June (with a Temp of 118° in the shade) by this means.

The total number of cases treated up to date has been 74, and no failure has been reported.

Cases treated have been various.

Local Sores, of a few weeks duration up to three years, varying in size from a 3rd bit to a patch 3 inches × 1½, in people from 1—50 years of age. They have been on the face, lips, nose, hands, fingers, arm, leg, thigh, feet, toes and body.

Chronic Ulcers on the leg and feet

The length of time the Snow should be applied was a matter of experiment, as I had only seen 1 case treated and had read nothing about it

I began with $\frac{1}{2}$ minute applications on children and on soft parts such as the face, and in recent cases, and varied it up to 1 minute for adults, on hard parts such as the foot, skin bone, hand, and in chronic cases

For the last two months I have given a 1 minute first application in all cases irrespective of age, position, or duration, and have seen no harm result, a good deal of reaction ensues in many cases, but frequently a cure is effected by a single application

The interval elapsing between applications varies with the reaction and effect produced

At first I made patients come for a second application on the 7th day, but by experience I found that as a rule no second application seemed necessary for 10—14 days, especially when a 1 minute application had been made

As long as the sore had a clean base and a healthy healing edge, a second or subsequent application did not seem to be necessary, but if the sore required further stimulation, a second application was made on the 7th day, or whenever the patient presented himself. The duration of the second or subsequent applications varied with the amount of stimulation considered necessary, from $\frac{1}{2}$ minute to $1\frac{1}{2}$ minute in very chronic cases

In many cases a single application of 1 minute has been sufficient to produce a cure

The question arises as to the number of applications which should be made on one sore at the same sitting, when the sore cannot be covered all at once by the CO₂ pencil, that is to say, does any harm result from applying CO₂ for 1 minute over a large area of a sore at one sitting?

I have made six applications at one sitting over a sore $3 \times 1\frac{1}{2}$ with a CO₂ pencil $1\frac{1}{2}$ " diameter, each application was 1 minute and the edges of the applications touched

No ill result followed, in fact, the patient came up again 10 days later and the sore was smaller in area

Warts—I have only treated two warts one case was not reported, the other case was cured in two applications, 1 minute duration at an interval of one week. There has been no recrudescence during the last three months

Chronic Ulcers react in the same way as local sores

This may be of use in showing—

1 That CO₂ Snow can be prepared during the hot weather

2 That by using a metal tube there is a saving of gas and labour

3 That applications for 1 minute seem to produce a sufficient and not excessive reaction

in patients of all ages, various sites, and different duration of sores

4 The treatment is efficient and is practically painless

NOTES ON TWO UNUSUAL CASES OF HEAD INJURY

By E A WALKER, M.B.,

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I HAVE ventured to publish particulars of these two cases, as in the first, the symptoms of middle meningeal haemorrhage were so slight, and in the second the injury is an uncommon one and its treatment is not so simple as the text-books would lead one to believe

Case 1—Maung Lu Gale, a Burmese boy, 12 years of age, was admitted to hospital at 11 A.M. on the 26th November 1910. It appeared that in the middle of the previous night thieves entered his father's hut, and in the subsequent struggle he received a blow with a stick on the right side of the head.

Condition on Admission—There appeared to be little the matter. The patient had walked two miles to hospital together with his father, who was suffering from a fractured rib. On examination a contusion was found measuring $2\frac{1}{2}$ " by 2" over the middle of the inferior part of the right parietal bone. The tissues were somewhat swollen and no depressed bone could be detected. There was no external wound. Patient complained of slight headache. Pupils normal. No paralysis. Pulse 72. Temperature 98.2°. No other injuries. Calomel gr. iv was given and patient put to bed.

Progress 27th November—Headache gone. Feels quite comfortable. Pulse 76. Temperature 98.4°. Walking about in the ward.

28th November—In the afternoon patient complained of a return of the headache, which was now severe, and in the evening his pulse was noted as only 57 per minute, and that there was an intermission after every 8th or 9th beat. Patient was fully conscious, pupils equal and normal, react to light. He was inclined to be restless.

29th November—Headache still persists. Pulse 61 and regular. There are still no symptoms of brain injury, except the headache and the slow pulse. On careful palpation of the contused area, it was thought that there was a very slight depression of the skull in one place, but this was doubtful. It was finally decided that there would be no harm in reflecting a large flap of scalp and having the trephining instruments ready to go on, if necessary.

30th November—Operation 8.30 A.M. Chloroform by Junker's inhaler. Scalp prepared by iodine alone. A large flap of scalp was made over the centre of the contused area, and underneath it was found an extensive fracture of the parietal bone extending into the frontal bone about $3\frac{1}{2}$ " long. The skull below the fracture was depressed to the extent of $\frac{1}{4}$ " over an area about 2" long by 1" broad. A crown of bone was removed with a $\frac{3}{4}$ " trephine from the upper non depressed area, the edge of the trephine circle touching the fracture. On removal of the crown of bone a black non pulsating clot appeared. To give more room more bone was removed with Hofman's rongeur forceps, until an area about 2" by 1" was exposed, roughly corresponding to the area of depressed bone which had been noted on reflecting the scalp. The whole of this area was covered by clot, which was removed by means of a small Volkman's spoon and warm boric acid lotion from an irrigator. The clot was about $\frac{1}{2}$ " thick in the centre, tapering off to less than $\frac{1}{4}$ " at the edge of the area exposed. During

its removal haemorrhage was free but not alarming, and eventually the dura was exposed, it was pulsating slightly and haemorrhage was taking place from three small branches of the middle meningeal artery. An attempt was made to tie these separately but without success, but by inserting two thick gauze strips with a pad over them, the bleeding was completely arrested. The external wound was then closed, except for 1" at the posterior end from which the ends of the two gauze strips were allowed exit. Before closure of the wound pulsation of the dura was noted to be increasing. Time 50 minutes.

Further progress—At 1 P.M. same day, patient was fully conscious, stated that his headache was quite gone, and could with difficulty be restrained from sitting up in bed. Pulse 76. The plugs were removed on the 3rd day without further haemorrhage, the wound healed by first intention except the part left open at the time of operation which closed slowly by granulation, the patient being discharged on 27th December. He could have left much earlier but had to remain on account of his father, whose rib was troublesome.

The interest in this case was in the diagnosis in which the difficulty lay between concussion and compression, and in the fact that all the classical symptoms of the latter were absent except the slow pulse, which did not appear until the second day after admission. This is a most valuable symptom, and its importance was emphasised by my predecessor here, Major Dee, I.M.S., at the Branch Meeting of the Burma Medical Association in Rangoon in 1910. In a case of suspected compression in head injury in an adult a pulse of 60 or less is almost a certain indication for operation, even if other symptoms are absent, and in any case an aseptic reflection of a scalp flap can do no harm.

I think in this case the haemorrhage was not marked until 28th November, the day on which the slowing of the pulse first appeared and that operation should have been done then, but as the patient was a child and the symptoms so slight, one was inclined to wait, also the bruising and swelling of the overlying tissues made the detection of the depressed bone almost impossible. It is interesting to note that four hours after operation not only had the headache disappeared, but the pulse rate had risen from 61 to 76 per minute, about which rate it remained during convalescence.

Case II—Maung Maung, a Burmese male, aged 26, was admitted to hospital at 4.15 P.M. on 26th November 1910, for an incised wound of the forehead with fracture of skull.

History—On the evening of 23rd November he was struck with a *dah*, he lost a good deal of blood but remained conscious. He also bled from the mouth and nose. He was taken to Kyoupyaw Dispensary the same night, treated by the Sub Assistant Surgeon and sent off to Head-quarters, 86 miles by boat on the 25th.

Condition on Admission—There is an irregular dirty wound 2½" long in the centre of the forehead, almost vertical in direction, extending downwards to within ½" of the root of the nose. This was cleaned up and a depressed fracture of the skull was evident.

Patient is conscious but drowsy. Temp. 110.1° F. Pulse 76. Pupils normal. No paralysis. Complains of headache.

26th November.—Operation 11 A.M. Two large flaps of scalp were turned down and the fracture exposed 3" of

it was visible, disappearing into the nasal bones. An area of bone to the left of the line of fracture was depressed to the extent of ½", this area was 2" long by 1½" broad. Dark venous blood was oozing from the line of fracture. A ¼" circle of sound bone was removed by the trephine, this exposed a dark oozing clot. It was now found that the depressed bone was firmly wedged underneath the sound bone to the right of it, and could not be elevated until the latter had been removed by the rongeur over an area 2" long and ½" broad. The depressed bone was also clipped away (it was splintered extensively) until a clear space was exposed roughly about ½" square. This was occupied by clot, it was gently removed by spoon and douche, while doing so, a bony splinter was discovered, shaped exactly like an arrow head, 1" long, ½" broad at the base and tapering to a fine sharp point. On its removal alarming haemorrhage of dark venous blood occurred, not in the manner of ordinary venous bleeding, but in well-marked spurts like an artery. It was then seen that the superior longitudinal sinus was punctured, and that the spurts of bleeding were caused by the pulsations of the brain. Firm pressure with swabs entirely failed to check the haemorrhage, and any attempt to catch the vessel with forceps was futile owing to it simply receding inward under pressure. The bleeding was increased by these manipulations and was now alarming, so two silk ligatures on curved needles were passed behind the sinus, 1½" in front and the other ½" behind the puncture and tied. The bleeding ceased as soon as the second ligature was tied. Some more splinters of bone were removed, the remaining clot washed away, the wound was partially closed and a large gauze drain inserted.

Further Progress was uneventful, but very slow. Two more small splinters of bone sloughed out, and eventually both silk ligatures came away, one after the other, the patient not being discharged until 20th January 1911.

He was then perfectly well with a large firm cicatrix.

There was absolutely no interference with cerebral functions as the result of completely closing this large sinus. Jacobson and Rowlands* give interesting notes on three cases of wounds of this vessel. In two, the operator was able to stop the haemorrhage with a lint compress, in the third case the wound in the vessel was closed with three fine catgut sutures. It is also stated "if a large venous sinus is opened, the haemorrhage can be, usually, at once arrested by *very moderate pressure applied at the right spot*". The italics are not mine, and certainly in my case more than moderate pressure hardly checked the haemorrhage at all. I presume that the objection to ligaturing the vessel is the fear of interference with brain function, or of causing thrombosis. However, in an emergency one has to act more on account of immediate dangers than of remote after-effects, which in this case the patient was fortunate enough to escape.

THE TREATMENT OF ACUTE GONORRHEA

BY W LEONARD FORSYTH, M.B., M.O., 83rd W.L.I., LIMA, I.M.S.

THE following is based on results shown in four cases only, but the treatment appeared so

* The Operations of Surgery, Jacobson and Rowlands, I, page 248

satisfactory as to be worthy of some report. Each case came under treatment within four days of the first appearance of urethritis and all were treated on exactly similar lines. At the end of thirty days no gonococci could be detected in centrifuged urine and the urethritis had completely subsided.

A series of local injections to the urethra formed the first line of treatment. These were done by myself, the patient holding the root of the penis himself very tightly and preventing any posterior urethritis. The urethra in this way was washed out four times daily by a solution of Tinc of Catechu ms $\frac{1}{2}$ to $\frac{1}{4}$ of sterile water. The lotion was thrown forcibly into the urethra by a Higgenson's syringe ballooning the crypts at each injection, great care being taken to prevent posterior infection. It is a much disputed question whether antiseptics *per se* kill off the gonococcus, or whether injections act only by lavage and flushing out. I have tried all the ordinary antiseptics recommended, and it seems to me that used as such they play a part very secondary to 'flushing out'. One ventures to think that sterile water is more efficacious if used for flushing out an infected urethra.

It is well known that the gonococcus grows and flourishes on the mucus secretions of the glands of the penis and prostate. The life of oxyuris in the rectum is wholly dependent on the mucous secretion from the glands of that region, and is very soon cut short when an astringent injection is administered 'per rectum'. On those grounds we ought to use an astringent for the urethra to diminish the pabulum for the organism. Catechu fulfils this, hence its exhibition in these cases. For the same reason, with a urethral syringe I introduced several times daily a weak solution of atropine particularly before going to bed at night. Before injection with Catechu a 5 per cent solution of cocaine was employed to anaesthetise the urethral mucosa.

It seems to me that injections in acute gonorrhœa *administered personally* are most useful in the treatment of the condition. All kinds of sequelæ follow careless injection, and I am convinced that injections in the hands of anyone but a medical man taking a keen interest in the case are highly dangerous, especially in the early stages of the disease. These injections were continued so long as there was any visible urethritis to be seen after a night's rest.

I have employed an injection of iodoform in oleum ærachis with much success in many cases of anterior urethritis which resisted other treatment, and I should employ it again in any future case in which catechu and atropine failed. This is, however, a digression and scarcely comes within the domain of acute gonorrhœa as I had no occasion to use it in the cases cited.

Diuretics in all cases were administered at once to achieve two objects (1) To prevent multiplication of the organisms in the urethra, (2) to prevent the back spread of the infection. Potass acetat e Tinct of hyoscyamus was given in abundant doses. When the kidney seemed to tolerate it, caffeine was substituted. Each night a double dose of diuretic was given along with pot brom grs $\frac{1}{2}$ in order to bring about nocturnal urination and at the same time to dull the action of the lumbar centie with the one end in view to keep the urethra clear of albuminous secretions.

The third line of treatment was "vaccines". These in all cases were given on the tenth day after the first appearance of the discharge provided the treatment by injections brought about a marked improvement—the improvement being judged by the symptoms, the amount and character of the discharge and the phagocytic index of the leucocytes on microscopical examination. The vaccine was a heterogeneous one for the reason that an autogenous vaccine could not be obtained. The initial dose was 10 mins Organisms in each case. One of the patients showed a negative phase, his leucocytes falling to 800 per cub mm on the exhibition of the first dose. But three days later his symptoms were very much improved and eight days after the inoculation he had a leucocytosis. The second dose given was 1,000 mins ten days after the first. In all cases the leucocytosis was very distinct, and the urethritis had completely disappeared within thirty days of coming under treatment.

In the treatment of gonorrhœa if satisfactory results are to be obtained, the practitioner ought to give the patient his undivided attention. Too often he is the subject of neglect and too often the grisly train of sequelæ ensues. In the usual course of events, the patient provides himself with a syringe and daily forces gonococci into his prostate, vasculai epididymis and so on.

Another important factor arising out of the above is the administration of vaccines at the psychological moment. The negative phase ought to be avoided, and these should be given when the urethral discharge has been much lessened by injections. It is important to take white blood counts when vaccines are being given. One sometimes sees a chronic urethritis with very abundant discharge, a pus film of this shows only too often that the diplococcus is there extracellular, the leucocyte showing no tendency to phagocytosis. Such a case commends itself to vaccines, which bring up the patient's opsonic index estimated in a rough way by subsequent examination of pus films showing so many gonococci per leucocyte.

Rest in bed must be insisted on, and the diet is of such salient significance that the importance of careful attention to it cannot be over-estimated.

Indian Medical Gazette.

SEPTEMBER

SOME COMMENTS OF THE AMRITA BAZAR PATRIKA ON MR MONTAGU'S BUDGET SPEECH

"Now where is the man to tell the Under-Secretary of State that the Indian possessed and even now possesses a knowledge of Sanitary Laws in much of which perhaps the Europeans yet lack. The very fact that outbreaks of malaria, plague and cholera in an epidemic form were unknown in this country within the living memory of many—plague is not even 15 years old—prove this conclusively. No people—only half a century ago—were more cleanly than the Indians. They had their disinfectants in cowdung. Fields were specially set apart for from human habitation for latrine purposes. Each village had its excellent system of drainage and at least half a dozen tanks, one or more of which was reserved for wholesome drinking water and the people had enough of healthy food to nourish their bodies. All these are now wanting, and it is most ungenerous, to say the least, to charge the bulk of them with ignorance of Sanitary Laws when they fall ill and die."—*Amrita Bazar Patrika*, July 29th, 1911

We do not often notice the comments of our lay contemporaries on medical or scientific matters, but the deliberate falsity of the statements made by the writer of the above extract in the *Amrita Bazar Patrika* is more gross and apparent than usual.

We propose therefore as briefly as possible to notice the main points in these disingenuous comments on the speech made by Mr Montagu on the Indian Budget in the House of Commons.

The criticism of the writer may be fairly summarised as follows—(1) that the natives of India “within living memory,” or “half a century ago” had still a good knowledge of sanitary laws, which, for some reason not explained, they have now lost, and this is considered as proved by the alleged absence of epidemics of malaria, plague and cholera in those days, (2) that the drainage and water-supply of towns and villages is said to have been excellent, their conservancy arrangements (which consisted of the use of a convenient field and cowdung as a “disinfectant”) are considered to have been all that is required.

It is a pity that the stern facts of recorded history show no trace of this idyllic state of things, on the contrary, existing records bear abundant testimony to very different and much less satisfactory conditions.

We shall take up the writer's points one by one. He talks of “living memory,” and of “half a century ago,” therefore, he can have no objection to our selecting descriptions and incidents of a period about the “fifties” and “sixties” of the last century and of the years before that time.

Malarial Fevers—Did no epidemic occur at or before this golden age of the *Amrita Bazar Patrika*? What about the malarial fevers?

They are known to be very ancient diseases, and since the 16th century A.D. malaria has been “the most universal of diseases and the economic loss it has caused has been appalling” (*Hirsch, Geographical Pathology*) The disease has been written about for over a century, in Russia, all over Central Asia, China, parts of Japan, Java, Borneo, Siam, Burma and India.

In Bengal, the history of the malarial fevers goes back a long way. Take the case of Gou, the capital of the Mogul Viceroy of Bengal. Gou has been described as once a “great and populous city.” Souza, the Portuguese traveller, in 1535 found it a city, “three leagues long and containing over a million families,” yet, only 53 years later, another traveller, Ralph Fitch, describes it as only a few villages covered with “grass as long as a man” and the haunt of “buffes, (sic) swine and deer” (sic) and “very many tigers.”

The story of its rapid decay has been told by an able writer, Mr M Chakravarti, (J.A.S.B., Vol V, No 7, July 1909). The rains brought on an epidemic and numberless men died, including, on 16th October 1575, the Viceroy himself, as the Mahomedan historian, Badaoni, remarked “all that rank and glory, all that grandeur and perfection became a dream and a fantasy.” The river ceased to flow beneath the walls of Gou.

We can trace the story of decay. The pools and puddles left by the retreating river swarmed with mosquitoes, malaria increased in each sickly autumn—till, as Stewart (*History of Bengal*, p 103,) writes, “thousands died every day and the living, tired with burying their dead, threw them into the river without distinction of Hindu and Mahomedan, a catastrophe without parallel in history” (1575).

The memory of this great epidemic of malaria has kept back the advance of civilization, and jungle still reigns supreme over the half obliterated ruins of the walls, forts and palaces of what once was Goui.

Take another example of an 18th century epidemic as given by the author of *Sari ul Mutakharin* (Raymond's Edition, p 264) —

"Towards the end of the year there arose such an abominable stench all over the city that poor and rich being equally affected were attacked by an epidemic fever that filled the houses with sick. The shops and markets were shut up, the streets became desert. This stench and sickness commenced at Patna and Ilahabad, whence it proceeded to Eckberabad and Delhi." This "frightful year" as the historian calls it, was A.D. 1730-31.

Coming, however, more near to the idyllic period pictured by the writer in the *Amrita* we may refer to the district of Jessoore.

This district from early ages has been a fen land, intersected by rivers and full of moashes. Sir James Westland, in 1874, well described the "progress of deltaic formation" by which the whole of the district, and indeed the Gangetic Delta, has been built up. The silting up of rivers has gone on from time immemorial, and owing to these processes of nature Jessoore has always been unhealthy. It is well known that the great and prolonged epidemic often called the "Burdwan fever epidemic" took its origin in Jessoore and the adjoining district of Nadia. This terrible fever epidemic raged from the twenties to the seventies of the last century and has been frequently described.

Dr Boyes Smith, when Sanitary Commissioner of Bengal "within living memory" (1868-70), described the state of Hughli District —

"As most lamentable, the blighting influence of malaria is everywhere present. The people live in villages which appal the sanitarian—every revolting abomination conceivable is to be met with in these villages—obstructed ventilation, corrupted ground, polluted atmosphere, putrid organic matters, faecal gases, the revolting water tank, and the consequent sickness, debility, degeneration and cachexia of the people."

Such is a contemporary description of many villages in Hughli District* within the "living memory" and it contrasts oddly with the imaginative account of the *Amrita* writer.

Cholera — Enough however of the malarial fevers, the writer in the *Amrita* states that

there were no *Cholera* epidemics "within living memory", let us examine this extremely ignorant statement.

It happens that this year (January and July, *Indian Medical Gazette*) we have published instances of early cholera outbreaks in India, one in the Madura country in 1609 and another in Bombay in 1709. The disease was then called *mort de chien*, a "dog's death". The ancient Sanscrit writers have described a disease which, even from their imperfect descriptions, has been recognised to be cholera, and many unrecorded epidemics took place before that which occurred in Colonel Pearce's force in Ganjam in 1781, and before the great epidemic which attracted universal attention by the virulence of its incidence in the Camp of Lord Hastings in Bundelkhand in 1817. This great epidemic took its origin from Jessoore and, ever since, Bengal has been recognised as the great endemic focus of this fell disease.

The following brief list of the chief epidemics which have attacked Bengal and other parts of India show the absurdity of the writer's statement that epidemics were "unknown" in the blissful period he has conjured up.

1819 — Prevalent all over India, and chiefly in Bombay.

1820-23.—In Bengal chiefly, spread up-country and to Persia and even to the shores of the Caspian Sea.

1826 — Calcutta badly affected, spread to Singapore, Agra and Delhi.

1827 — Calcutta attacked Huidwai fan outbreak, which spread steadily to Afghanistan, Persia, to England in 1831, and to other parts of Europe.

1831-33 — Severe epidemic in Bengal, spread to Central India and finally to Mecca.

1838-40 — Severe in Bengal, and North-West Provinces, spread to Kabul and carried from Calcutta to China with the troops.

1842 — Severe, mainly in Bengal.

1848-50 — Severe in Bengal, up-country and Madras, reached the Persian Gulf.

1863 — A great Bengal epidemic, widely spread by pilgrims, reached Spain and France—and in 1866 reached England (4,000 deaths in London).

1866 — Severe epidemic in Bengal, spread to Asia where it attacked the Camp of the Viceroy.

1867 — Virulent outbreak at Haidwai, spread to Kabul where it caused 8,000 deaths.

We need not trace its history further, but in the face of these facts how can a writer

* The latest review of this great epidemic fever appears in our columns this month. Dr U N Bhattacharji ably describes these valleys of the shadow of death in the sixties and seventies, i.e., "within living memory" (See p 341 above.)

maintain that there were no epidemics of cholera "within living memory"?

PLAQUE

We shall take plague next. This extraordinary ignorant writer has the hardihood to maintain that "plague is not yet even 15 years old."

Passing over references to the great plagues and pestilences of ancient days—e.g., that which ravaged the armies of Mohammad Tughlak (1325-51), or Timur's armies at the end of that century, we may mention the Malwa plague of 1448, which destroyed so many of the troops of Sultan Ahmad I, and another, which is clearly proved to be true bubonic plague from the accurate description of the historian Mutamad Khan in 1619. In more modern times we have the great Western Plague epidemic which began in Cutch and lasted from 1812 to 1821. Then followed the great Pali Plague of 1836 and, above all, since 1823 it has been recognised that plague or *maha-mari* has persisted on the lower Himalayan slopes in Garhwal. Epidemics of *maha-mari* (which has been scientifically proved to be true bubonic plague) have been recorded in the following years, 1834, 1835, 1846-47, 1849-50, 1851-52, 1853-54, 1859-60, 1870-75.

Surely these outbreaks are epidemics "within living memory"?

SANITATION OF VILLAGES AND TOWNS

Leaving the three epidemic diseases mentioned by the writer we may next turn to the happy village life imagined by him to have existed within the period assigned.

We may briefly dismiss his reference to "cowdung" as a "disinfectant"; he betrays a strange sense of humour in selecting this form of excretion as a "disinfectant". The account, however, of the simple primitive methods of "sanitation" in the ideal villages of his happy period needs some emending, and fortunately we have plenty of contemporary descriptions of the actual state of the conservancy drainage and water-supply in towns and villages.

As for Calcutta of the 18th Century, we have a most remarkable description given by William Mackintosh (*Travels in Europe, Asia, etc.*, 1782).

He writes:

"There is not a spot where judgment, taste, decency and convenience are so grossly insulted as in that scattered and confused chaos of houses, huts, sheds, streets, lanes, alleys, gullies, sinks and tanks which jumbled into an undistinguished mass of filth and

corruption, equally offensive to human sense and health compose the Capital."

Nearly a century later in 1863 the Royal Commissioners described Calcutta in almost equally forcible terms (*Report*, p. xxxix)

"The bad sanitary condition of Calcutta is notorious, in the chief part of the vast area covered by the city, that part inhabited by the native population, the pestilential condition of the surface drains and yards, the state of the many tanks, cannot be conceived by any one who has not seen them."

This report was written by Lord Stanley, Sir Proby Cautley, Sir Ranald Martin, M.D., and others, and very carefully describes the actual state of things in and around many stations in India.

As a contrast to the *Amrita Bazar Patrika*'s account of the village tanks, we may quote the following—

"Some tanks resemble horse ponds, some are covered with minute vegetation; it is the custom to set up tanks for bathing and washing, and others for drinking-water, but a large amount of organic matter finds its way into all."

In their Recapitulation (*Report*, p. lxxxix) the Royal Commissioners wrote as follows—

"The towns and bazaars are in the worst possible sanitary state, undrained, unpaved, badly cleaned, and often teeming with offensive and dangerous nuisances—with tanks, pools and badly made surface gutters, containing filth and foul water. The area overcrowded with houses, put up without order or regularity, no public latrines, every space covered with filth in consequence, no water supply except bad shallow wells and unwholesome and doubtful tanks."

This is the deliberate opinion of the Royal Commissioners of the state of the towns, bazaars and villages in India in 1863, and is in strange contrast to the description given of his imaginary villages by the writer in the *Amrita Bazar Patrika*.

We have perhaps elaborated this matter too much. No one with any knowledge of the rural sanitation of Bengal could believe the description which we have quoted at the head of this article, but unfortunately the *Amrita Bazar Patrika* is read by many who do not know and who, living in more enlightened times, are quite unaware of the less fortunate conditions under which the previous generation existed. It is difficult to believe that the writer himself was ignorant. We fancy he must have conjured up in his imagination a totally ideal and false conception of the village of his childhood, but this is no excuse for his gross ignorance of the elementary facts of the history

of the chief diseases of India, and we cannot acquit him of disingenuousness in his attempt to blacken the present by his picture of the past, which we have shown to be imaginatively false and utterly misleading. We are sorry to see a newspaper which represents the educated opinion of Bengal lending itself to such tactics.

The ideal state of affairs described by this imaginative writer existed neither within the past half century of living memory nor in the period of recorded history. It is pure myth.

DRUG ADULTERATION IN INDIA

For several months past newspapers in India had been discussing the question of drug adulteration in India, and we have made inquiries into the matter and are convinced that the evil is a real one, and that reputable and honest firms are suffering seriously by competition with unscrupulous firms who send quantities of drugs to India at prices which are simply impossible if the drugs are pure and genuine. These impure drugs are largely sold in India by small firms in the bazar and elsewhere, and the drugs are supplied on these terms by large firms, in America, the Continent and also in England.

The *British and Colonial Druggist* in a recent article gave the following as some of the drugs so sophisticated and rendered useless for clinical purposes —

Contents

"(a) Aqua flor aurant conc 1 40	(a) Apparently Eau de Cologne
(b) Ferri quinin cit	(b) Quinine 2½, 5 and 7½ per cent
(c) Liq bism am cit	(c) Gravity correct Bis muth & strength, apparently composed of liq am cit and liq bism am cit &c
(d) Quinine sulphate	(d) Considerable proportions of other cinchona bark preparations
(e) Iodoform	(e) Iodoform mixed in various proportions with sulphur
(f) Santonin	(f) Chiefly boric acid
(g) Syr ferri iodid	(g) Half strength
(h) Standardised B P preps	(h) Evidently not standardised, all strengths of active principle
(j) Vin ipecac	(j) Apparently no alkaloids present
(l) Glycerin	(k) Glycerin, glucose and water
(m) Quinine pills	(l) Contained no quinine
(n) Oils	(m) Practically all these are adulterated, except special brands in original containers
(n) Spirit ammon arom	(n) S g 918, alcoholic strength 27 u p. Apparently made with poor class ammonia and oils.

Adulteration carried out in India itself is rife, but the above list includes a goodly number of articles sold in original packages of European and American houses. The label on the bottle rarely tells one much, but, as a rule, B P or B P C is omitted."

We know of other cases, as for example *Santonin* which can be purchased in bazar shops at a price one-tenth of the genuine article. Is it any wonder that medical men sometimes find *santonin* to be ineffective as an antihelmentic, and that it has but a poor repute in India as a treatment for spina? Then, again, enormous quantities of colourless tasteless oil made from petroleum are imported and used to adulterate mustard oil, and especially cocoanut oil to the very great profit of the sellers of the adulterated article.

Again, spirituous preparations are sent into this country well below proof in strength, and it is well that Government should note that there is a loss of revenue in such a swindle.

Again, we have seen samples of "sandalwood oil" shipped by a large firm to India as such, which contained extremely little pure sandalwood oil. Iodoform is sent out largely consisting of boric acid and sulphur. *Copaiba balsam* comes out practically innocent of *copaiba*. Quinine comes out with a considerable percentage of the inferior preparations as *cinchonidine*, etc.

We could quote many more instances of grossly adulterated drugs, but the more important question is what can be done to put an end to this iniquitous but profitable trade.

All medical men in practice suffer from these frauds, when they prescribe a drug, they do so on the understanding that their patient will receive the genuine article, of the strength and potency laid down in the British Pharmacopœia or such standard authority.

If adulterated drugs are used, the patient cannot be benefited to the degree expected and the reputation of the doctor suffers.

Medical men, therefore, should, as far as possible, avoid the use of drugs obtained from small or obscure firms unless they are known to them as trustworthy. For hospital use drugs should only be obtained from large firms of high repute whose good name is a guarantee of honesty, and, above all, medical men should not be led astray by cheapness. "Cheap and nasty" is an expression peculiarly applicable when drugs are in question. It is simply impossible that a drug can be pure and genuine if it is sold at a price 5 or 6 times less than the

drug is quoted for by reputable firms. Such drugs must be avoided.

The next question is, can nothing be done to control or prevent the importation of the sophisticated article?

We have no Pure Drugs Act in India, but the question will have to be faced. If such an Act was in force, and if the Custom House authorities at the few big ports were directed and employed to examine such imported drugs and to confiscate them, or better ship them back at the cost of the senders, much good would be done. Again, certain articles are imported chiefly for use of adulteration for mixing with drugs or foods in this country. Such importation could be traced, and if cheap mineral oil found its way in enormous quantities to a seller of "pure" vegetable oils, the inference would be obvious, and analysis would soon settle the matter. Severe penalties must be enforced by such an Act, and the time has come in India when honest trade and the health of the people must be protected by such an Act.

We hope Government will seriously take up this matter in the interest of the public health.

Current Topics

I M F PENSION FUND REVISED REGULATIONS

The revised regulations of the Indian Military Family Pension Fund were published in *Gazette of India*, dated 8th July 1911 (No. 863 P., dated 7th July 1911). We have already commented on these Pension Fund Regulations and need only call again attention to the new scale of rates. As we said before there was a reduction of 25 per cent in subscriptions made in September 1907, this is now raised and the reduction will only be 20 per cent from the older rates charged before September 1907.

The new and current rates are now as follows. Half rates only are payable by officers on leave in and out of India except privilege leave.

Class		Married officers			Unmarried officers or widowers		
		£	s	d	£	s	d
I		3	16	8	1	18	4
II		3	1	4	1	4	6
III		2	6	0	0	18	4
IV		1	10	8	0	10	8
V		0	15	4	0	6	2

For a son, all classes alike 1s 6d per unit up to the age of 21, and for a daughter, up till marriage, the new rate is 3s 10d.

We commend a study of these regulations to all I M S officers.

THE ARMY BEARER CORPS RESERVE

The following appeared in India Army Orders dated 10th July 1911 —

With the approval of the Right Hon'ble the Secretary of State for India, the Government of India have sanctioned, as an experimental measure, the formation of a reserve of 500 men for the Army Bearer Corps.

The experiment is to be tried in the 2nd (Rawalpindi) Division, and the following rules are published for its organisation —

Recruitment

1. Reservists will be recruited from among all classes (except sweepers) other than those extensively enlisted for the combatant ranks of the Indian Army. Not less than 50 per cent will be Hindus, of which 30 per cent will be Hindus of classes from which all other Hindus will accept water.

2. Bearers from the Army Bearer Corps (Active List), who have completed their term of service, may be transferred to the reserve list.

3. Reservists should be medically examined as to physical fitness on enrolment, and when subsequently called up for annual training, and should fulfil the requirements of paragraph 25, Army Regulations, India, Volume VI, as regards height chest measurement and physical fitness.

4. There will be no sirdars or mates in the reserve, and in the absence of special orders to the contrary, these will ordinarily be provided on mobilisation by promotion of men on the active list. Sirdars and mates who have gone to the reserve may, however, when called up on mobilisation, be again posted to those grades, if considered advisable.

5. The period of reserve service should not exceed 25 years.

6. The duties of recruiting, training, etc., of reservists will devolve on the Staff Officer of the Divisional Medical Mobilisation Stores, working in co-operation with recruiting officers.

7. Form of Enrolment, I A F K-1154, as amended by Army Department Gazette Notification No 449, dated 26th May 1911, will be used.

Pay and allowances pensions, etc

8. Reservists will receive a retaining fee of Re 1 a month.

9. When called up for training and on service, they will serve on exactly the same conditions as to pay, etc., as men on the active list.

10. Bearers from the Army Bearer Corps (Active List), transferred to the reserve, will, in addition, be entitled to their former good-conduct pay when under training and on service.

11. Reservists will have no claim to pensions or gratuities, except wound and injury ones on service, or when embodied for duty.

Disbursement of pay

12 Reservists will be paid in accordance with paragraph 1018 (1), Army Regulations, India, Volume I.

Clothing

13 Reservists while under training will be supplied with articles of clothing and bedding, which will be renewed every seventh year.

Accommodation

14 Tents will be provided for them while under training.

15 Also buildings (or storage racks) for the storage of their clothing and bedding during non-training.

Training

16 On enrolment—reservists will receive a three months' training, and thereafter a month's training every year.

17 Beavers from the Army Beaver Corps (Active List), transferred to the reserve, will not be required to undergo the preliminary training of three months, but only the subsequent training of a month every year.

18 Reservists should, as far as possible, be called up for training during the manoeuvre season.

MALARIA IN THE PUNJAB

THIS extremely valuable series of Scientific Memoirs is enriched by one of its latest additions, Major Christopher's monograph on *Malaria in the Punjab*.*

The volume is large and full of information about Punjab Malaria, and is very fully illustrated with maps and charts.

We quote below a summary of the conclusions arrived at by the author, but an introductory word is necessary.

This volume is chiefly concerned with those rare and remarkable outbreaks of malaria which when they occur work such terrible devastation among the many races of the Punjab. Excluding the too well-known ravages of plague in recent years no other disease is of the same importance as these sudden and widespread outbreaks of what Major Christopher calls epidemic autumnal or fulminant malaria. A disease that wipes out in two months over 307,000 persons is surely terrible, so terrible that some believed that the disease could not be malaria, but the connection between endemic or ordinary malaria and these epidemic and fulminant outbreaks is well brought out in Major Christopher's monograph. We recommend this valuable volume to our readers, it is a monument of earnest and persistent good work and throws a flood of light on many economic and sanitary problems in the Punjab.

"Briefly recapitulating the facts recorded in the earlier parts of the paper we can summarise the results of our observations as follows—

(1) Malaria in the Punjab is manifested in two ways, namely, as "endemic malaria" and as "autumnal epidemic" or "fulminant malaria".

(2) Economically the latter is by far the most important, and it is the effects of this form which are usually referred to when the disastrous results of malaria in the Punjab are spoken of.

(3) The epidemic of 1908 was of this character and there have been similar and almost if not quite as severe epidemics at intervals at least as far back as the sixties.

(4) These epidemics are local, that is, their effects are greatest in the centre of the epidemic area and fade towards the periphery. Their distribution vividly calls to mind such phenomena as areas of low or high barometric pressure and not at all that of a disease following lines of communication or even local peculiarities of the ground.

(5) The history of past epidemics shows that they affect all parts of the submontane tract, but have shown a special frequency over certain areas. In 1908 there existed for the first time two distinct major epidemic areas, the southern one producing epidemic effects also over the western half of the United Provinces.

(6) Epidemic malaria attacks most severely those communities which already show a high degree of endemic malaria. It is, therefore, not merely the result of malaria attacking those unaccustomed to the disease nor are endemic areas in any way protected against it.

(7) The most salient feature of the epidemic condition is the excessive mortality and its conspicuously infantile character.

(8) The condition of a population in the Punjab regards natural increase or decrease is influenced rather by the number and severity of the epidemics to which it has been exposed than by its endemic malaria. Even the effects of famine are mainly shown through the effects of the epidemic malaria which follows them.

(9) Towns and cities suffer equally with, even in some cases more than, rural areas, and even the centre of the large cities, Amritsar and Delhi, are only moderately protected from epidemic effects.

(10) The determining causes of epidemics are excessive rainfall and scarcity, the former is an essential, whilst the latter is an almost equally powerful influencing factor. Owing to the meteorological cycles, there is a tendency for epidemics to occur at the point where the first heavy monsoon appears after a succession of years of deficient rainfall.

(11) The epidemic areas are not necessarily or even usually coincident with that of the heaviest rainfall, nor that receiving the greatest increase over the normal rainfall. Any marked relation to "interval" between the falls, etc., is not suggested by a study of the rainfall figures. The whole facts are only explicable when flooding is taken into account.

(12) When epidemic areas are examined in detail, the villages are found to have suffered almost exactly in proportion as they have been flooded. Floods act equally whether they are due to local rain or to the indirect effects of rain causing the overflow of rivers. The higher epidemic figures seem to depend entirely upon floods and fulminant malaria of a certain intensity is almost synonymous with malaria of diluvial origin. The relation to flooding explains why epidemic areas are not exactly coincident with the areas of heaviest rainfall and why the former almost always overlaps the latter in the direction of the line of drainage.

In the case of lower epidemic rates the thana figures may be influenced in two ways—

(1) By the number of villages showing "fulminant malaria".

(2) By the number of villages showing a moderate raising of the mortality.

Whilst the very severe manifestations of fulminant malaria seems to be dependent on floods, epidemic

* Scientific Memoirs No. 46, Malaria in the Punjab, by Major S. R. Christopher, M.B., F.R.S., 1911.

malaria seems to reach a certain intensity apart from floods in the sense we are now using this term. But the conditions at Mian Mu and other observations suggest that even here something very like flooding occurs in so far as extensive sheets of water are formed.

(13) The exact mechanism of epidemic causation is still unknown. But the epidemic condition appears to be due to an excessive seasonal increase of the normal parasite rate, fluctuations in which occur even in healthy years.

Malarial infections must be studied quantitatively. An endemic index of 100 per cent may be represented in one case by a community containing only a few parasites in their blood and living in a condition of comparative health; in another case the index may refer to a community heavily infected and prostrated by fever.

In the Punjab one frequently hears matters discussed as if the population was uninfected and remained so until the fever season came round when any individual was more or less liable to catch infection. It is nearer the truth to say that we have a population already infected, and that what happens in the fever season is the "hastening up" of this infection.

(14) Experiments on sparrows and proteosoma show that severity of infection is largely dependent on the dose inoculated. This is not merely a matter of the number of infected mosquitoes, but of the number of sporozoites injected at each bite. This in turn depends upon the number of gametes in the blood of the original sparrow by which the mosquito was infected. Under experimental conditions, the latter was the most important factor, and it was easy to see as a result of dissection that one heavily infected mosquito might inject more sporozoites than a hundred that were only scantly infected.

No observations exist as to the conditions in regard to anopheles at epidemic times, but the close association of fulminant malaria with actual flooding suggests something more than the ordinary reproduction of the genus in pools, etc. The matter is the most urgent still, awaiting elucidation.

(15) Physical features influence epidemics and low water logged areas are especially susceptible to epidemic conditions. Higher tracts, on the contrary, are comparatively less susceptible. But these differences are often lost when a district becomes involved in the nucleus of an epidemic area.

(16) The great canal systems have no distinct influence upon malaria of this kind, though it is possible that neglected canal irrigation with extensive local floodings may have had very serious effects in the past."

PLAUE IN TURKISH ARABIA IN THE EIGHTEENTH CENTURY

SOME letters from the East India Company's Factory at Bassora (Basra, the Balsora of the *Arabian Nights*), preserved in the India Office Record Department, refer briefly to a great epidemic of plague which devastated Bagdad and Basia in 1773.

Letter from Bassora, dated 8th February 1773, paragraphs 2 and 3 "The plague is broke out at Bagdat, commerce of all kinds continues at its lowest ebb."

Letter from Bassora, dated 23rd April 1773, paragraphs 1 and 2 "On account of the plague the Agent and some others have retired to Belvon and the rest have shut themselves up in the Factory. Coja Petrus and Coja Marcar, two Armenian Merchants, are appointed the Com-

pany's vakeels, during the absence of the Agent and Council."

Paragraph 3 "Mentions the death of the Kya and Shioff Bashaw, the French Bishop of Bagdat, and three European Priests"

Signed W D Latouche, Henry Moore, and George Abraham

Letter from Bassora, dated 10th January 1774, paragraphs 2 and 3 "The plague has carried off two millions, of which number 200,000 died in Bassora. It ceased suddenly the 25th May."

Paragraph 9 "Surgeon Reilly has escaped the plague, and not more than three Europeans have died"

ABSTRACTS of letters from Bombay, Vol III, 1767—1783. These volumes contain also abstracts of letters from the Factories subordinate to Bombay, Tellicherry, Anjengo, Surat, Basia, etc.

In the above brief notes, we see some resemblance to plague at the present day in the very small mortality of Europeans. The statement that not more than three have died, presumably refers to Basia alone, as the deaths of four Europeans in Bagdad are mentioned above. From the special mention of Surgeon Reilly's not being attacked, it would seem that he had done his duty among the sick, and not shut himself up or fled, as the other Company's servants had done. Two Medical Officers of the name of Reilly were serving under the Bombay Government at this time, unless, which is possible from the dates, there was only one, whose Christian name is given differently in different records. Charles Reilly was born in 1743, appointed in list of 15th April 1767, and arrived on 15th February 1768 (Muster Rolls). He was Surgeon to the Factory at Tellicherry in 1770. Michael Reilly was appointed on 17th December 1767, is shewn in the Muste Roll of the First Battalion in 1768, 1769 and 1770, and was still serving in 1774 what became of either of them does not appear in the records. A letter from Bushire, dated 28th June 1780, reports the death of George Abraham, one of the Basia Council, who signs the above letters at that place on 17th June. Coja is *Khwaja*, merchant. *Shioff* *Bashaw* apparently means chief banker. *Kya* is a contraction of the Turkish title *Kahya*, itself a corruption of *Katkulu*, meaning steward, bailiff, deputy, or lieutenant. The *Kya* was the Deputy of the Pasha, and would act as Governor of the Province in the Pasha's absence.

The mortality at Basia, 200,000, must surely be exaggerated. Perhaps an extra cipher has been added to the figures in copying. Belvon seems to have been a country house owned by the Factory near Basia.

Six years later, another letter from Bassora, dated 15th July 1780, states that "an epidemic fever has raged here," and reports the deaths of James Rubson, Surgeon of the

Factory, Francis Palmer from Bengal, and Wm Bowne, owner of the *Yarmouth*, a ship which had come from Bengal. James Robson was appointed on 12th April 1772, the only other mention of him is the report of his death.

GRANT MEDICAL COLLEGE REPORT 1910-11

THIS report reached us in July

The following new buildings were opened during the year —

Lecture Theatre

Pathological and Police Surgeon's Laboratories and the Coroner's Court

Refrigerating Rooms for the Anatomy Department and the Morgue

The Students' Hostel

The new Physiological Laboratory buildings are still in course of construction, and are likely to be completed by the end of next year.

The list of changes in the staff is a formidable one. A special grant of Rs 5,000 for new books for the Library was received and the annual grant increased from Rs 700 to 1,000. There were 519 students on the rolls: 59 European and Eurasians, 291 Hindus, 148 Parsons, 14 Mahomedans and 7 Jews. In addition there were 45 military medical pupils. We note that of 15 candidates for the preliminary examination for the M.B., B.S., only 9 passes (1 female), one candidate held for the M.D. degree and failed. The majority of students appearing take what is in the report called "the Degree of L.M. & S."

PARAGRAPH 2 of the regulations regarding the grant of study leave to officers of the Indian Medical Service, as published in Army Department Notification No. 31, dated the 13th January 1911, is reconstructed as follows —

2 "The period of such study leave will be calculated in the case of an officer under military leave rules at the rate of *one-twelfth* of pension service, and in the case of an officer under civil leave rules at the rate of *one-twelfth* of active service, as defined in the Civil Service Regulations, up to a total in either case of twelve months in all during an officer's service."

In the rule as previously published (see *I.M.G.*, March 1911, page 103), instead of the words in italics above the words were "one month for each year of" pension service, etc.

Reviews

Scientific Memoir No. 43 — *The Relation of Tetanus to the Hypodermic injection of Quinine* by Lt Col Sir D. SEMPLE

ACCORDING to this observer, tetanus spores may be harboured in the tissues of the body, e.g., in a healed-up wound, for months or even

years, and tetanus germs live in the intestinal tracts of many healthy individuals. In four cases out of ten examined, the isolated tetanus germs were found in the faeces of healthy human subjects. He is therefore of the opinion that, in most of those cases where an injection of quinine is followed by tetanus, a latent tetanus infection pre-existed and the quinine merely induced or favoured development of the tetanus germs. He does not, however, deny the possibility of tetanus germs being occasionally injected along with the quinine, as these germs were isolated by him from the distilled water used in dissolving the quinine for an injection (in human subjects) which was followed by tetanus. In this connection the following passage occurs: "Quinine being a protoplasmic poison is not likely to harbour living spores before being dissolved." Whatever lethal effect quinine may have on tetanus spores—a point which has never yet been settled—it certainly can have little effect until dissolved.

It is noteworthy that the percentage of infections is less (25%) when tetanus cultures are injected the day before quinine administration is begun than when quinine administration is commenced the day before tetanus cultures are injected (100%). Yet the author has merely tested the prophylactic power of antitoxin (Table XIX) under the most favourable conditions for its effective action (Table I to V), viz., he gives the quinine injections the day after the injection of tetanus cultures. It would be interesting to know the effect of serum when quinine is injected simultaneously with or a day previous to the tetanus culture, as it is quite possible for tetanus germs to exist in the quinine solution used for injection or to gain admission to the tissues of the body after quinine administration is begun—either through a lesion in the intestinal mucous membrane or from a wound on the body surface. It is stated that if the serum be given immediately before or after quinine injection, the resulting immunity lasts two or three weeks. There is no experimental proof given of this duration of passive immunity, or that one injection of serum would render several daily injections of quinine safe, and even granting that immunity may last so long, there is always the possibility—almost certainty—of malarial relapses and re-infection, with the consequent danger of anaphylactic phenomena both in their acute fatal and commoner subacute forms.

The chapter showing the effects of quinine on animals is disappointing. The solution of quinine mostly used by him is "1 gr. to 1 c.c." of saline (a curious mixture of two systems of weights and measures), i.e., about 1 in 17, which is more dilute than is ordinarily used for hypodermic injections in man, and more concentrated than is ordinarily given by mouth to man. There is also a difficulty in arriving at a minimum lethal dose, due to the author

not accepting the term in its technical sense. The smallest dose that may kill (even apart from cases of idiosyncrasy) cannot effect the determination of the smallest dose that will never fail to kill—the minimum lethal dose. It has also escaped the author's notice that bi-hydrochlorate and bi-hydrochloride are two names for the same salt. Further, as a solution of 1 in 17 was almost exclusively employed, the conclusions drawn should be qualified by a statement of this dilution. Lastly, in the intravenous experiments, where the majority of the animals died within one minute from asphyxia, the quinine was in far too great a concentration for this mode of administration, and would undoubtedly form a dense precipitate inside the blood-vessel at the site of injection, and the mode and rapidity of death suggests embolism.

Three important points insisted on by Sir D Semple are—(1) that a hypodermic injection of quinine in animals invariably destroys tissue at the site of injection, (2) that the general and local effects of quinine given intramuscularly differed in no way from those of quinine given subcutaneously, except that in the former case the animals seemed to suffer more pain, and (3) that the hypodermic administration of quinine as a routine measure is not justifiable.

In Chapter VI an endeavour is made to show under what circumstances hypodermic injections of quinine are *necessary*. It is stated that where severe forms of malaria occur and where quinine cannot be tolerated by the stomach, it is necessary to give quinine hypodermically, and that there are cases in which it is possible to save the patient by hypodermic injections where it would be impossible to do so by the ordinary method of quinine administration. In all cases where quinine cannot be tolerated by the stomach and the gastro-intestinal tract is healthy, it will be found that the quinine is administered in too great a concentration or a wrong salt is being employed an insoluble salt, e.g., euquamine or tannate, easily gets over the difficulty. In all other cases, where quinine by the mouth is not tolerated or is not effective, the gastro-intestinal tract is not healthy. Under such circumstances two lines of action are open—(1) to put the gastro-intestinal tract in order—if time permits, or (2) to administer quinine intravenously. In severe forms of malaria demanding urgent action and in comatose cases, there is only one justifiable mode of treatment, viz., by intravenous injection. This method is incomparably more rapid and certain in its effect, and is attended with fewer risks and with no local tissue destruction. The circumstances under which it is *necessary* or advisable to give quinine hypodermically have still to be formulated.

It should be noted that Sir D Semple, a few hours after administering large hypodermic doses of quinine to rabbits, found traces of

haemolysis. Some years ago the reviewer carried out a similar series of experiments, but giving quinine intravenously he was forced to conclude that, thus administered, it was impossible to produce haemolysis in healthy rabbits.

In Chapter II, the author is seen at his best. This chapter, which gives an account of the nature of tetanus infection, should be read by all interested in tetanus.

Manual of Post Operative Treatment — By

DR HASSAN SUHRAWARDY, late House Surgeon, Medical College Hospital, and now Lecturer on First Aid to the Calcutta Police Calcutta, 1911 Thacker, Spink and Co Price Re 1

THIS is an unpretentious little book. It is dedicated to Major R Bud, FRCS, CIE, IMS, and is addressed to young house-surgeons. It is eminently practical and the advice given is good, and there is no young medical officer who will not be the better of carefully studying this book. We can confidently recommend this useful little book, and we would like to see it circulated in all Government Hospitals in India, where surgical operations are carried out.

An Introduction to Therapeutic Inoculation — By DR D W GARMALT JOYES Macmillan and Co Pp 170 Price Rs 3/6 net

THOSE who are interested in the present position of the treatment of disease by bacterial vaccines will naturally turn to this handy little volume. They will find much useful information embodied in a series of essays the arrangement of which leaves something to be desired. There is also a good deal of overlapping and repetition which detract from the value of the book. In the first part which professes to deal with principles there is an account of the actual preparation of vaccines, this is repeated in a different form in the appendix, but is not referred to in the part of the book labelled "Practice".

The description of the technique and of the results obtained are based on the work done at St Mary's Hospital, and so have great value as first hand accounts of the practice obtaining in the home of vaccine therapy. The dose of gonococci recommended is $2\frac{1}{2}$ to 50 millions, whereas Allen prescribes 200—1,000 millions. Evidently in this case, as in the case of tuberculin the dosage has not been determined with even an approximation to accuracy, and it is open to the critic to suggest that the one scale of doses is likely to be just as useful or as useless as the other. In the case of other vaccines the dosage has been determined with some degree of definiteness, and it is noteworthy that these last are the vaccines which have been proved to be of most value, such as the staphylococcus and coli vaccines.

It is to be hoped that there will be another edition of the book, and that the author will find time to entirely reconstruct the scheme of the work so as to make it a handy guide to vaccine treatment.

A Manual of Pathology.—By GREEN and BOSANQUET, p 642 Publishers Baillière, Tindall, and Cox Price Rs 15/- net

MOST medical men are familiar with the old dry and uninteresting Green's Pathology, its one merit consisted in its containing the amount of matter suitable for most examinations, and it is probably solely owing to its usefulness as a student's book that it has survived so many editions

The present edition is altogether different from the old book, it is not only an excellent student's text-book, but it is a readable treatise on pathology. The subject of parasitology has been completely re-written and is now one of the best sections of the book

Immunity and the modern developments connected with it are clearly described. The illustrations are numerous and well chosen

Altogether the authors and publishers are to be congratulated in having achieved the difficult task of rejuvenating a text-book that had begun to fall into the sere and yellow leaf

SPECIAL ARTICLE

THE PUNJAB ANTI MALARIAL CAMPAIGN (1911)

We have much pleasure in providing our readers with the following article by Lieutenant-Colonel J R Adie, I.M.S., the Chief Malaria Medical Officer in the Punjab

We are particularly interested in the work of the Central Bureau at Kasauli, which is sure to be of the greatest value to all workers against Malaria

"In the following article, I propose to give a short account of how things are going on in the Anti-Malarial Campaign in this part of India. It will be remembered that, as a result of the Malaria Conference in Simla in 1909, a Central Scientific Committee was established to plan operations, and each province organised, or meant to organise, an investigating agency, consisting of an officer and a small staff

The Central Committee have drawn up plans of how to collect information, and headings under which the accumulations of different provincial reports may be systematically studied

In addition to that (and this is what I wish to lay stress on), they have established a Central Malaria Bureau in Kasauli under the direction of Major Christopher. This Bureau bids fair soon to become an Emporium of all matters relating to malaria, a museum of mosquitoes, parasites, fish enemies and malarial soils, a library of malarial literature, and a laboratory where anyone can go and work up the subject

It is situated in a delightfully secluded spot near the Pasteur Institute, and not very far from the Central Research Institute. Kasauli is indeed a Laboratory lover's paradise, and no

doctor in India would regret a few months' stay in a place where the temperature is pleasant, where appliances are plentiful, and the officials in charge most charmingly indulgent

In the first room I entered there was the mosquito collection, which includes all Culicidae. This is kept up not only in museum style but for systematic study. Each species of anopheline is given a drawer, and there you have the type if possible, variations, and separate mountings of wings, legs, etc. Hundreds of other specimens are also mounted in order to study variation, which is such a healthy check to species making

All dodges and tips for mounting specimens are displayed—on cardboad, or cork, or pith, whether in paper compartments in test tubes, or in preservative fluids, or in calcium dried specimen tubes. Other specimens are prepared so as to show scale structure, these, and an ingenious table of classification, at once put an enquirer on the right track for identification. In another part are shown the various stages of ovum, larva, pupa, of the different species

In only such a Bureau as this can one study the interesting subject of distribution of species, and in this connection I may say, that for distribution and variation, let anyone look into the *fuliginosus* drawer!

Then, there is an almirah containing named specimens of all kinds of fish which devour mosquito larvae, and further on, a collection of soils and aquatic plants associated with malaria

In the next department is a collection of slides showing stages of the different species of malaria parasite. Then one comes on to literature, pamphlets, books, memoirs, etc., and a very good series of water colours illustrating the parasite

In other portions of the building are found facilities for studying the development of mosquitoes—breeding out larvae, etc., and more literature which tells one how best to obtain instruments and apparatus

It will thus be seen that the Bureau is a real live friend—not merely a dry museum—who will help you in any way possible in your studies of the subject. And all it asks is to be provided with material to make its collections complete, and representative, and something for India to be proud of. Let every medical man in India, then,—and everyone of us must be fighting malaria in some form or other—subscribe his mite in the way of specimens of mosquitoes, blood films, and notes concerning malaria

The Central Committee also issue *Paludism*, a new publication, which you have already noticed so favourably, and which contains the very latest on the subject

I now turn to the Punjab doings. A very useful and convenient laboratory has been fitted up in Lahore, with microscopes, dissecting microscopes, stains, glass apparatus, work tables, etc., and arrangements are made in suitable almirahs to stock the collections of mosquitoes, larvae and films from the various localities examined.

We spend a great part of our time in field work. Thus, Delhi and the Delhi Division have been systematically surveyed. The procedure is to go, say, in the September to December period to Delhi, collect anophelines the whole time, dissect as many as possible, ram through the city and suburbs taking blood films of children and of prisoners, examine the blood of all British soldiers in that fever-stricken fort, scour through and through the fetid *Bela*, note and map breeding places, capture larva-eating fish, and so on. Assistants at the same time make excursions in other parts, searching city quarters, canals, tanks, and examining Registers of Births and Deaths. All this information is then collected for analysis in the laboratory where maps and charts are prepared. The greatest business, we find, is the getting of blood films. Sometimes, as in Delhi, it is quite easy. At other times, as in Kangria, all manner of excuses and objections are raised, and parents are frightened at the mere look of a doctor with a needle in his hand. Then the examining of the films takes up a vast amount of time.

Another part of our work is to examine the death returns, by *thanas*, throughout the Punjab. Major Christopheis has already, in his Punjab Report, taken the total number of deaths as a basis to work on, so that, not to travel over the same ground, we are doing deaths from "Fever" only. Charts are in preparation covering the Punjab figures for a series of years by *thanas* per week (lately, by fortnights).

Another line of work is to select certain suitable spots such as Ferozepore, Gujrat, Gujranwala, Bhera, and note once a month the prevalence of anophelines and the parasite rate in children. The names of the latter are registered, and the same children will thus be examined over and over again to observe the changes between the off-season and fever season. Lately, we have been occupied with the Kangria district. This district (or rather its valleys) has very bad fever in the rice season, when the whole of the cultivable land becomes a huge swamp. In the off-season the parasite rate is about 4 per cent, and we are very anxious to see the change in September and October.

As to results, there is nothing weighty to chronicle so far. In Delhi, there is confirmation of the idea that the *Bela* is greatly responsible for the heavy fever in fort and city, and there is no doubt that the clearing of jungle necessary for the coming People's Fête which is to be held in the *Bela* will constitute one of the most important sanitary measures in recent Punjab times. An evil fetid swamp will be converted into a peaceful flowered park, and what worthier landmark of the historical visit could Delhi wish for?

In Kangria, in the off-season, it may be noted that all infections met with so far have been of the benign and quarten kinds and nearly all had gametes. There has been no film showing rings or malignant tertian.

As regards anophelines, the rare *punctulatus* and the new *Fowleri* have been found in scanty numbers in the Delhi neighbourhood, besides the ordinary lot—*culexifacies*, *nigerinus*, *barbiostis*, *pulchrirena*, *Fuliginosus*, *Stephensi*, *Rossi*, *Maculipalpis*.

Barbiostis was very common in the *Bela*, but a large number of dissections failed to find malarial infection.

In the Kangria side, the noteworthy changes from the plains are the appearance of *Listoni* in place of *Culicifacies*, the heavy prevalence of *Willmori*, *Maculipalpis*, *Maculatus*, *Lindesayi*, and the striking variations in colour markings (of the palp especially) in the first three. *Maculatus* has not apparently been found before in those hills. A curious point occurs to one with regard to *Willmori* and *Maculatus*. These two are almost alike in appearance, to the naked eye they are indistinguishable, but the microscope or strong lens shows that the former has scales on the dorsum of the abdomen, and the latter has not. They are therefore in different genera. How do the sexes recognise each other? Experiments are in hand to see if interbreeding occurs.

In addition to the above kind of work, the Punjab Laboratory is carrying out experiments on the use of quinine and its allied salts. The subject of gamete carrying in the off-season in persons of apparently good health is of vast importance, and I would very gratefully receive series of films for examination or notes on such cases from officers. We have not yet got to the exact spotting of all gametes at all ages of their existence. Another thing I would gratefully receive is a spleen smear in all deaths, especially of pneumonia or *Bokhar* in the cold season.

In conclusion, I cannot avoid alluding to the sad death of Lt.-Col. Leslie. No one took a keener interest in the subject of malaria, no one has done more for its proper investigation, and no one has given his fellow-workers more suggestive advice."

ANNUAL REPORTS

SANITARY REPORTS

I—EASTERN BENGAL AND ASSAM

THIS is a very interesting and complete report. The following birth and death rates of various provinces are worth reproducing—

Province	BIRTH RATE		
	1901 08	1909	1910
Eastern Bengal and Assam	39 12	40 46	37 96
Bengal	38 40	37 79	39 72
Central Provinces	53 01	51 63	55 42
Madras	31 40	33 10	33 60
Burma	(a) 33 22	35 91	36 04
Bombay	34 15	35 59	37 32
United Provinces	41 35	33 32	41 00
Punjab	42 40	35 10	42 70
North West Frontier Province	36 70	34 70	38 14

(a)—Lower Burma only

Province	DEATH RATE		
	1904-05	1909	1910
Eastern Bengal and Assam	31.77	33.89	33.71
Bengal	16.39	30.55	33.10
Central Provinces	38.67	33.09	44.88
Madras	24.40	21.80	24.60
Burma	25.36	30.18	28.13
Bombay	33.65	27.38	30.40
United Provinces	42.79	37.34	38.67
Punjab	49.30	30.90	33.30
North West Frontier Province	32.80	26.60	26.85

Cholera was prevalent and caused a death rate of 3.95 per mille. The Sanitary Commissioner, Lt Col E C Hare, I.M.S., remarks as follows —

Gauhati, Mymensingh, Narayanganj and Dacca, the four towns which have a pipe water supply, record ratios of 4.28, 2.52, 1.79 and 1.55, respectively. It will be interesting to note, in the course of time, what effect the filtered water will have on the incidence of cholera in these towns. It is the chief water borne disease with which we have to deal, but at present, from one cause or another, little improvement is noticeable in the records. For instance, the outbreak of cholera at Gauhati this year occurred at a time when the waterworks were under repair and the people had to depend on the river and tanks for drinking water, and again in Mymensingh and Narayanganj the waterworks at present only provide for a small portion of the town, the larger areas being still supplied by tanks and wells, which are, of course, always open to contamination.

On the subject of malaria there is much of interest and we quote the following —

"Captain Young, I.M.S., the Deputy Sanitary Commissioner, made an interesting investigation into the history of malaria fever in the Rajshahi division during the previous five years. He prepared a series of maps showing the distribution of fever in the division, and he found that during the years 1905, 1906, 1907 there was a severe outbreak of the disease, having the Malda district as its centre, and that during the succeeding years 1908-1909, while other centres of epidemic malaria existed in the northern part of the division, it was more or less absent from Malda. Now, during the years 1903-1907 a railway line from Katihar to Godaguri was under construction in this district, and during the 3rd and 4th years of the work, 1906 and 1907, there was a considerable "aggiegation of coolie labour" which corresponded to the period of greatest intensity of the epidemic of malaria, and when the railway was opened in 1908, and the labour force was again scattered, the epidemic subsided. Captain Young considers that the chief factor in this epidemic was the aggregation of the labour force in the construction of the line."

The recommendations of the Malaria Conference have been the subject of careful consideration. The lines on which the campaign against malaria is to be conducted have been drawn up by the Sanitary Board, and are now under the consideration of the Local Government. The services of Dr. Bentley, who has recently been working under the Bombay Government, have been engaged as a special Deputy Sanitary Commissioner for a period of five years to organise and supervise the work, as it is realised that the undertaking is of such magnitude and importance as to be beyond the scope of the regular staff of the Sanitary Department. The lines on which the campaign is to be conducted have been framed in accordance with the recommendations of the Sanitary Commissioner with the Government of India. A malarial survey of the province is to be undertaken, maps are to be drawn, and tables of statistics are to be compiled, to illustrate and mark off the epidemic and endemic areas of the disease. To enable this to be done with accuracy, specially selected areas are to be first examined, to determine the "correction factor," by which figures representing the deaths from malaria can be separated from those representing the other causes of mortality, which are classified under the general term "fevers." Experimental demonstration camps are also to be formed, partly to train the subordinate medical staff, and partly to educate the masses in the uses of quinine and in other antimalarial measures. Sanitary text books are to be issued in conjunction with the Educational Department for the use of schools and teachers with special reference to malaria and the value of quinine, and other publications such as advertisements and pamphlets are to be issued for distribution to the public. In addition to the above measures a systematic study of the life history of the parasites, their hosts and their relationship to each other in this province is to be carried out. It is not proposed to undertake extensive anti-larval measures at the present time. A campaign of this nature has been in progress for the last

two years in Dinajpur and Jalpruguri, and from the experience which has been gained, it is evident that there is little practical advantage in attempting to exterminate mosquito larvae in general. The work is extremely laborious and costly, and the possible advantages to be gained are not commensurate with the expenditure."

There was a recrudescence of Kala azar in Sylhet District, and a small outbreak in Golaghat was specially investigated. Major Christophers reported that the disease had been gradually introduced from the neighbouring district of Nowrang, and other cases have sprung up around the original foci. The disease clings to groups of houses and spreads very slowly.

The following extract shows that the important question why some parts of India are immune from plague is at last receiving a small measure of attention —

"Captain Kunhardt, I.M.S., of the Plague Commission, visited the province to investigate the cause of its immunity from bubonic plague. His full report has not yet been received. From observations which he made in Dacca, Chittagong and elsewhere, he came to the conclusion that the towns in Eastern Bengal were infested with rats (*Mus Rattus*) to a much less extent than the towns in other parts of India, because the houses were built either more solidly with cement plinths and roofs made of stone slabs, or of more flimsy materials with walls of bamboo matting and roofs of corrugated iron or light thatch, which afforded little shelter for them. He also found that the houses were better lit, and kept in better repair, and that the people were cleaner in their habits, and did not allow so much rubbish to collect around their houses."

It is well known that Eastern Bengal is very advanced in their system of quinine distribution and the following extracts are of great interest —

The year under report was one of great change. The system of selling sulphate of quinine to the public in piece packets was abandoned, and a new system was introduced in which the hydrochloride salt, which is more soluble and contains larger percentage of the alkaloid has been substituted and instead of a single dose of 7 or 10 grains, a treatment of 80 grains the minimum amount of the drug which is sufficient to cure an attack of fever in an adult, has been taken as the unit. Each unit of "treatment" consists of 20 four grain tablets of uncoated hydrochloride of quinine packed in a corked glass phial and enclosed in a wrapper, on which are printed directions for use. Ten of these "treatments" are packed up in a card board box, and constitute a "parcel" which is the unit of sale to the retail agents. Each parcel is sold to the agent at the wholesale price of Re 170, and he is allowed to retail the contents to the public at three annas a treatment, which gives him a profit of seven annas on each parcel he sells.

A ton of hydrochloride of quinine, made up into "treatments," was purchased during the course of the year at a cost of Rs 42,170.

In the Assam Valley districts, with the exception of Goalpara, in which the sales have nearly doubled, and of Kamrup, the sales have decreased. In these districts also, I am inclined to attribute the want of success to the very large area of country which is served by each post office. The quinine is not reaching the people and some other additional agents must be found. In this connection, I recently made, on the advice of the Divisional Commissioner, a proposal to the Board of Revenue that mandals should be appointed authorised agents for the sale of quinine, as they come into much closer contact with the people, and live to visit every village in their circle at least once if not twice a year. The proposal has been agreed to experimentally, and arrangements are now being made to issue them advances. The Board also recommended that certain selected gronobas should be employed as agents, and I have arranged to supply up to 25 per cent of them.

The question of providing some preparation of quinine which is suitable for small children is under consideration. The original proposal was to provide tannate of quinine in chocolate, such as is used in Italy, as this is the only comparatively tasteless salt of quinine, the price of which is not prohibitive. Further enquiries however, have shown that the difficulty of preventing the chocolate absorbing moisture in the rains would be very great and that it would be very expensive. Experiments have been made by various wholesale manufacturers to provide some suitable substitute, but nothing quite satisfactory has yet been found. One serious objection to the use of the tannate is that its alkaloidal value is about one quarter that of the hydrochloride and to get an equivalent effect, a dose 3 or 4 times as large has to be given, which alone renders it unsuitable for the treatment of fever in small children. This deficiency in alkaloidal value was one of the reasons which led to the substitution of hydrochloride for sulphate in the "treatments," and considering the instinctive tendency of the people to give too little of the drug rather than too much, it ought, I consider, to be used in its most concentrated form rather than in a diluted one. The tannate of quinine in chocolate

seems to be more suitable for prophylactic purposes than for use in the treatment of fever.

In 1908, a scheme to utilise the services of school masters as agents for the sale of quinine was drawn up with the Director of Public Instruction. The Chairmen of District and Local Boards of certain districts were asked to select schools which seemed likely to act as good centres of distribution, and the masters of which could fairly be relied upon to take an interest in the work. Eighty schools were selected in Mymensingh, Jalpaiguri, Cachar and Nowrangpur. A special report on the progress of the work has been called for, and the result of the experiment will be considered in due course. In the meantime, from enquiries which I have been making in certain other districts, I have come to the conclusion that school masters generally could be induced to take a good deal more interest in the subject than they do at present, if it were put before them in a suitable way, and I think that more emphasis ought to be laid on the training of teachers and school masters in the aims and methods of anti-malarial work. In some few districts efforts have already been made to utilise school masters as agents notably in Rungpuri, Noakhali, Bogra, Goalpara, Kamrup and Lakhimpur.

The Agent of the Assam Bengal Railway and the Manager of the Eastern Bengal State Railway have consented to allow stationmasters to be utilised as agents, and orders to supply them with quinine have been issued. It is possible that they may become very useful agents especially in small centres, where there are no post offices at hand.

In the way of advertisement besides the issue of the leaflets and pamphlets on the subject which have been freely distributed both by Government and by the Sanitary Department 8,000 pictorial posters in Bengali illustrating the effect of quinine on malaria have been issued for exhibition at all railway stations, post offices, towns, and schools in the Eastern Bengal districts, and one hundred thousand illustrated Bengali almanacs have been printed for distribution to school children. They are interleaved with advertisements of quinine and short sentences on its use, which can be committed to memory.

We must agree that these methods deserve if they have not yet commanded success. The experiment is an interesting one quinine grown and made in India was given up the hydrochloride was used instead of the better known sulphate new methods and new pieces were introduced and substantial profits provided for the vendors we can only hope that greater success will be met with in future years.

The Sanitary Commissioner ends his report with a strong recommendation for a second Deputy Sanitary Commissioner and we understand that a second officer has been appointed.

We commend this very interesting report to our readers.

BENGAL

II

The figures and rates for births and deaths are based on the old census figures of 1901 and are consequently somewhat out of date.

The death rate from all causes was 33 in 1910, 30.5 in 1909 and 36.19 for the past five years, the urban death rates being over 5 per mille better than the rural rates. The Calcutta death rate is 27 per mille so there is plenty of room for the Calcutta Improvement Bill just passed into law. 105 males were born to 100 females but the recent census showed a majority of females in Bengal.

Cholera was mildly prevalent in 1909, but assumed serious proportions in 1910 viz., 32 against 34, the five years' average Bihar suffered most.

We quote the following extract —

The Civil Surgeon of Muzaffarpur says that the Sitamailhi subdivision was badly affected with cholera, and there was hardly any village in this subdivision which did not suffer. Regarding the severe prevalence of the disease in Gaya the Civil Surgeon, Captain Conoi, says —

The incidence of the disease seems associated primarily with a deficiency of a proper water supply, and later on with the fouling of unprotected surface wells during the rains. The utter disregard of most natives and particularly the poorer classes for the rudiments of sanitation as regards the water they drink, must account for most of the cases of infection.

"In Gaya town where the mortality amounted to 5.54 per mille, most house holders have private wells 99 per cent of which should be considered as insanitary. They are badly situated, imperfectly protected and are, as a rule, surrounded by millions of flies which breed in the stinking drains around."

The first portion of the remarks is almost equally applicable to every place."

Smallpox —A marked decrease in 1910.

Plague —A death rate of 9 per mille against 23 and 31 in the two preceding years.

The district of Suraia lost 8.7 per mille of its inhabitants, Patna, Shahabad and Monghyr came next in the black list. Major Clemesha writes —

"Regarding the severe prevalence of the disease in Suraia which recorded nearly half the deaths registered in this Province, it appears that the epidemic which began at the end of last year went on increasing in intensity during the earlier months of this year, 3,608 deaths occurring in January, 5,615 in February and 7,018 in March. In April the mortality dropped to 2,374 and in May to 262, after which it prevailed sporadically from June to October, a fresh epidemic starting in November. Major Gwyther, the Civil Surgeon, says —

"The foci this year have been very scattered, thus differing from last year's epidemic. Places far separated from one another have had cases, while the whole of the country in between has been free. In almost every case villages that were affected last year are again attacked, but the spread has not been from village to village and *tola* to *tola* as it was last year."

Only 349 plague inoculations were performed during the year under report against 704, 2,710, 2,766 and 1,717 during the four preceding years, showing a steady falling off in the number of these operations since 1907. Siuri, Patna and Monghyr were the only districts in which this prophylactic measure was adopted, 236, 53 and 6 operations respectively being done in them, while none were performed in Calcutta or Gaya, against 363 and 48 shown to their credit last year. It is reported to be believed in at Gaya town where inoculations are being performed since the close of the year.

'Evacuation of infected houses continues to be the most popular of all the measures taken for combating plague, and is being appreciated more and more. In many places, it is thoroughly believed by the people, and it generally proved distinctly useful everywhere. Disinfection was carried on in suitable areas in Pithia, Gaya, Shahabad, Muzaffarpur, Dhubri, Monghyr and Bhagalpur, destruction being resorted to in Gaya alone. Kerosene oil emulsion was used in Shahabad and Bhagalpur. Recourse was also had to rat destruction in Gaya, Shahabad, Siuri, Muzaffarpur, Dhubri, Monghyr and Bhagalpur. The largest number viz., 138,976 having been killed in Monghyr, which was followed by Muzaffarpur, Shahabad, Gaya and Bhagalpur with 45,951, 42,398, 36,467 and 12,000. Besides these 7,173 rats were also destroyed in the town of Madhubani in Dhubri, where the system of paying rewards was in vogue. These rodents were in almost all cases caught in traps. In Calcutta 89,315 live rats were destroyed in the Corporation depots and a reward amounting to about Rs. 4,500 was paid to the rat catchers. In addition to these 28,814 dead rats found in the streets were properly disposed of.'

Fevers —The improvement in the death rates continued as regard anti-malarial measures we read as follows —

"An executive staff consisting of a Special Deputy Sanitary Commissioner and an Assistant Surgeon, specially trained in this work was placed at the disposal of the Committee with a view to the systematic examination of the problems connected with the prevalence of this disease. Major Fly and Assistant Surgeon Mithilesh Chandra Ghosh, the officers selected for this purpose, joined their duty in December and were able to make some preliminary surveys of certain malarious tracts in the district of Murshidabad before the year closed.

"The free distribution of quinine during the fever season, as recommended by the Drainage Committee referred to in paragraph 47 of last year's report, was continued during 1910. Twenty-three Sub Assistant Surgeons were deputed for the purpose, and the operation was carried on in the same districts that were taken up last year, viz., 24 Parganas, Nadia, Jessorah, Murshidabad, Birbhum, and Purba, also in the district of Palamau.

"Altogether about 216 pounds of quinine were distributed in this way. It is reported the people are now beginning to appreciate the efficacy of this prophylactic. In Purba the Magistrate tried the measure on the lower subordinates of Government employed in that district, and found the experiment very successful on the whole in preventing malarial fever among them.

"Altogether 15,450 parcels (each parcel containing 100 ten grain pice packets) and 5,610 phials (each phial containing 300 three and one third grain tablets) of quinine were sold during the year under report, against 25,514 and 4,818 in the previous year. It appears that the largest number of parcels, viz., 3,800 was sold in Khulna, Jessorah coming next with 1,847 parcels and 706 phials the next best sales taking place in Nadia and Murshidabad, viz., 1,650 and 1,335 parcels and 636 and 406 phials respectively. Shahabad, Darjeeling and Purba which recorded the highest mortality from fever showed comparatively small consumption of this drug."

The big giant of 4½ lakhs was well spent on a long list of sanitary improvements, chiefly water supplies and drainage schemes, all of which must result in good, and the report of the Sanitary Board shows that a formidable list of new works is in hand, details of 31 such schemes being given in the report.

III—PUNJAB

THIS report is submitted by Major E. Wilkinson, F.R.C.S., D.P.H., the Sanitary Commissioner. The new provisional figures of the census put the population at about 19½ millions, or a decrease of 1 per cent. The degree of loss varied much; plague stricken Ludhiana lost in the last decade nearly one quarter of its population. The greatest falling off in numbers has been in the female population. Is this associated with their stay indoors habits and greater liability to infection by plague infected fleas?

The birth-rate in 1910 was high, 42·7 per mille higher than in any other Indian Province except the C.P. where it was 55·4. The death rate is given as 33·2 per mille against a mean 5 year death rate of 45·6. The death rate for children under one year is 262 for males and 260 for females.

Cholera was very prevalent in 1910, the death rate being 11 against 21 in the quinquennium. The infection is debited against Haidarwā and Krishnā and 37 pilgrims for Haidarwā were reported to have had cholera in various places on their return from Haidarwā.

Small pox was not seriously prevalent.

Plague—The report on this disease is furnished by Lieutenant Colonel Browning Smith the Chief Plague Medical Officer. After two years of lesser intensity 1910 saw a severe epidemic, 169,867 deaths is a total in the Punjab since plague first appeared of over 2½ millions. As regards the attitude of the people to plague precautions Lieutenant Colonel Browning Smith writes as follows—

"Slow as progress may seem after many years of experience I can confidently say that progress is being made, that the old attitude of hostility and suspicion has generally disappeared, and that the people, although self help is rarely forthcoming, are much more ready than they were to accept advice and even to look for it. The relations between the plague staff and the people are quite friendly, and there is no doubt that an important factor in bringing this about has been the fact that the plague staff iterate as doctors and administer general relief from the portable medical equipment with which they are provided."

Inoculation, evacuation and rat destruction are the chief measures relied upon. There were 104,713 inoculations done in 1910 bring up the total of inoculations done in the Punjab to no less than 17,3,536 over 1½ millions.

The people believe in the value of evacuation but for many reasons it is very little resorted to."

Rat destruction—The Report says—

"The operations of the past three years, including the one under report, consisted in rat destruction by poison and traps, commencing in the autumn in all those places where it was considered likely that plague infection persisted through the summer in order to prevent the recurrence of plague or, at any rate, to so mitigate its recurrence that the annual visitation would be materially diminished. Rat destruction was also carried out in places as soon as infection appeared. In the Jullundur district and a portion of Hoshiarpur trapping had been extended to nearly all villages not in the essential part of the general policy, but primarily in response to the request of the people themselves, the genuineness of which request is guaranteed by the fact that in the Jullundur district the people actually paid some Rs 17,000 for traps, in a few other districts small areas were taken as an experiment and an object lesson to the people, where all the villages were trapped."

There was a falling off in the "fevers" death rates 17·1 against 22·7 for the quinquennium. The year 1910 had a good prosperous harvest, and had a low fever death rate like years 1883 and 1886. The following extracts are of interest—

"There were 5,027 wells cleaned and 395 pumps constructed at a total cost of Rs 14,511. This shows a very considerable decrease compared with the previous year."

In the present year note books were opened in the following districts—Kangra 12 villages and Sirhind 11 villages. The Deputy Commissioner, Rohtak, writes that both the Civil and Medical Officers record therein any sanitary matters which come to their notice, and that they have been useful in giving information to inspecting officers. In the Jhelum district every village has been supplied with note books, and illaqadarais have instructions to note periodically the sanitary state of their villages. In Rawalpindi district note books are maintained. Mr. C. M. King, I.C.S., Deputy Commissioner, Ambala, states that Mr. Sykes, his predecessor, was of opinion that as village sanitary note books which were supplied to 10 villages in 1895 were not generally kept up to date, it was no use extending the experiment further and the matter was consequently allowed to drop. Mr. J. F. Connolly, I.C.S., Deputy Commissioner, Sialkot, states that no action was taken to supply villages with note books, the utility of which he doubts.

The question of rewards for improved village sanitation is a subject not yet fully appreciated by village communities and is dependent largely upon the exertions of Deputy Commissioners and Civil Surgeons. You will see it is noticed that not much was done by village communities to improve the sanitation of their villages and, though prizes were offered, they could not be awarded as they had not been earned. I was, however, struck during my tour, with the desire for improvement of village sanitation expressed by a number of persons. The difficulties in the way were also impressed upon me. Not the least of such difficulties are the want of organisation in villages and the customary right of agriculturists to collect manure upon common land in which the village wells are ordinarily situated."

IV—BURMA

Major S. A. Hillis, M.B., D.I.H., etc., submitted this report.

The census of 1911 not being used in the report, the birth and death rates calculated on the census figures of 1901 are necessarily inaccurate. The infantile mortality still remains extremely high. In one district the admixture of Madras blood has, it is said, lowered the natural vitality of the Burman and the infantile mortality is very high. In Mandalay 60 per cent of the deaths were from preventable diseases like tetanus, bronchitis, debility and malnutrition. The year 1910 was remarkably free from Cholera and Small pox was less prevalent.

Plague showed an increase, the deaths were 7,741 and the death rate was 91.

(1) Birth oiling was abandoned as expensive and producing no temporary or lasting effects. (2) Disinfection was disengaged as being of no value. (3) The construction of rat proof houses for the Burmese was seen to be an impossibility. (4) The use of Drunz Virus was discontinued and the Laboratory closed. (5) The necessity for close inspection of every death in towns by specially appointed Sub Assistant Surgeons was seen to be more important than ever. At the close of the year, the following measures were advocated—

(1) Evacuation of small towns and villages and of large upland towns near which extensive land areas rendered the measure easy of adoption. The towns in which this was successfully accomplished were Myitkyina and to a certain extent Moulmein. (2) Inoculation of those who would accept it and particularly of plague establishment and of persons in infected areas unwilling to evacuate. (3) The systematic trapping of rats. This has apparently been successful in smaller towns such as Paungde in preventing a plague outbreak, but in large towns like Frome it has had no appreciable result in preventing an epidemic. When the facts are taken into consideration that although one pair of rats can produce 600 a year, there are nevertheless certain natural causes limiting the excess of the rat population, it will be seen that the effect of continual continuous rat destruction by trapping will vary with the individual maximum rat population of the town which reproduction can effect dependent on food supplies and other unknown factors, and on the number of female rats destroyed. Of these two factors the latter has the greatest influence and the smallest diminution in the number of rats destroyed by trapping may leave a monthly margin of excess in reproduction over destruction sufficient to allow the rat population to rise again to its normal figure. (4) Rat destruction by drives to be successful must be commenced immediately the reports of rat mortality are received. (5) Bazaars and infected foci should be dealt with first. When reports are not received early the non infected portion of the town should be first driven. In badly infected towns where evacuation and inoculation are refused, nothing can be done by the Plague Department to combat the disease. (6) It was early seen that rat driving led to large recurrent expenditure and was a temporary expedient only. It is, however, a measure that cannot be dispensed with as without its aid most of the important operations for checking plague cannot be carried into force. The important measures alluded to are the reduction of the rat harbourage and food supply. This was effected by—

(a) Removal of corners and of ceilings, the substitution of masonry in place of earth floors, provision of rat proof granaries and private food stores and removal of granaries from congested areas. (b) By enforcement of the lodging house bye laws to render houses (occupied by the poorer classes and by a fluctuating population) as sanitary and as free from rats as possible. (c) By the education of the Burmese to protect themselves. The most striking example of this is in the Lower Chindwin towns. The people themselves if rats are reported to be dying, tear down their thatched roofs and destroy all rats they can catch, and to prevent the entrance of infected persons to their villages they go out against them with dabs.

47 The total number of rats killed in the Province was 1,639,993.

With reference to rat destruction the following points required attention—

(a) *The rapidity of destruction*—The total number of rats per head of human population removed from a town in a year is of no value in estimating either the actual number of rats per head of human population in the town, or the value of the work as a plague preventive measure. This is owing to the fact that during the whole year over which this rat destruction is spread, the rats are breeding to make up the loss. The only way of obtaining a real estimate of actual rat population or of reducing the rats sufficiently to prevent a plague epidemic is by the simultaneous destruction of a large number of rats by driving or other method of rapid destruction.

(b) *Offering of rewards*—This method which lends itself to fraud and the importation of rats from districts into towns in which rewards were offered became a trade in some parts of Burma in 1909. The returns of rats obtained in this way are useless for scientific comparison with those received from places in which no payment is offered.

The following note on Quinine is of interest—

To encourage the use of quinine as a prophylactic remedy for malaria, 1 grain and 5 grain tablets were manufactured by the Central Jail, Rangoon. A full box containing 10 five grain tablets or 50 one grain tablets was issued at a cost of 1 anna to the purchaser or 10 grains for one piee. Eight full boxes were made up into packets each containing 400 grains, and were issued at a cost of 4 annas to the licensed agents of distribution who were authorised to sell each packet for 6 annas.

The agency of distribution was direct to the local treasuries and through them to post offices, and licensed vendors who were allowed to sell it at a profit of 2 annas per packet.

A *Keystone* tablet making machine and a *Fleet's* tablet machine were employed but the output was insufficient, an *Allen and Hanbury's* large rotary tablet making machine was ordered from England.

The total amount of raw quinine received during the year was 3,885 lbs 4,742 grains, of which 2,673 lbs 4,742 grains were issued as tablets.

The total number of five grain tablets manufactured during the year was 2,973,394 and of one grain tablets 4,703,850. A local firm supplied 403,580 five grain tablets and 4,076,200 one grain tablets were obtained from the Madras Medical Stores. The total number of tablets issued was 3,498,000 five grain tablets in 13,725 packets, and 8,575,400 one grain tablets in 21,446 packets. Of these, 19,699 packets or 1,575,920 five grain doses and 9,510 packets or 3,804,000 one grain doses have been disposed of by treasuries. The largest sales or distribution effected were in the—

Southern Shan States 2,562 packets, Maubin District 2,200 packets, Mogok 1,586 packets, Thazi Irrawaddy 1,353 packets, Pakokku 1,301 packets, Alyib 1,185 packets, Prome 1,155 packets and Pegu 1,147 packets.

Henzada which sold the largest quantity in 1909 only disposed of 216 packets this year. Thrietmyo, with the highest fever mortality of any district sold 527 packets. No returns have been received from Yimethin and the Northern Shan States. The large increase in the sale of quinine is most satisfactory.

In view of the Beri beri research work of recent years the following is interesting—

The chief centres of Beri beri in Burma would appear to be the Lighthouses along the Southern and Western Coasts, Bassein, Toungoo, Hengzada, Meigui, Pyapon, Rangoon, Insein, Maubin, Thrietmyo and Thonze but cases have also been recorded in Upper Burma at Bhamo, Shwebo, Kindat, the Chin Hills and Mandalay.

During 1910, 37 cases of Beri beri were recorded amongst Lighthouse keepers and crews of light ships against 70 in 1909. Arrangements have been made for the supply of cured rice to the light houses and light vessels by the 1st May 1911 and the result of the change on the rice diet if followed by diminution in the disease, will prove an interesting confirmation of Fraser and Stanton's Theory.

In June 1910 the Director of Public Instruction issued a circular to school masters asking for information on sanitary points bearing on the food supply and the hygiene of the schools with special reference to Beri beri.

The replies received and information obtained on my subsequent visit to the schools were extremely interesting, but cannot be entered upon in detail in this report. At the Bassein SPP Karen Mission the rice used is Burmese rice milled in their own school mill, but not polished. It is stored in a special granary in sufficient amount for ten days' consumption. The disease was unknown till a Beri beri patient from the infected seminary at Insein slept in the compound and ate with the pupils. The boys' and girls' schools are in separate buildings in the same compound. All the food for the girls' school is cooked in the boys' kitchen. After the boys' side of the school was affected the girls first attacked were those who actually went to the boys' school daily to fetch the cooked food. Boys and girls are taught together in the same class rooms.

Girls' Normal School, Bassein—The disease has visited the schools yearly during the past six years. Every year the same patients are affected. The disease commences about fifteen days after return to school. All the cases occurred in one dormitory. The rice used is hand milled Burmese rice without decorticitation. The boys in the normal school, which is situated about 50 yards away in the same compound, obtain the whole of their food supply from the girls' kitchen. They have never been affected with beri beri.

Two Karen Mission, Bassein—No case has occurred in this school for the past 20 years. The rice up to the present has been pounded by the pupils themselves. They have now commenced milling by machinery and decorticating.

The result of the change from hand milled to decorticated rice on the occurrence of the disease is awaited with great interest.

From the evidence adduced it appears that there are grounds for believing that rice is not the only factor in the causation of beri beri. In all Burmese Schools, *Nyap* which contains a large amount of phosphorus is a staple article of diet. This would seem to combat the theory that deprivation of phosphorus is the main cause of the disease. Samples of rice milled by the pupils will be taken during the year 1911 and sent to the Public Analyst for the estimation of the amount of phosphorus remaining after hand milling.

THE KING INSTITUTE, MADRAS

DR F M GIBSON, the Director, submits the report on the working of the Microbiological Section of the King Institute of Preventive Medicine, Madras. The report is a large one and is largely composed of complete analyses of the water supplies of Madras.

We quote the following extracts from Dr Gibson's Report—

'The year has been an exceedingly busy one for the section. In all directions the volume of outside work has increased and several new branches of work have been started.'

For some time back it has been evident that the accommodation in the existing building of the section was inadequate even for existing requirements, and that the increase of work bound to come in the future as the functions and the advantages offered by the laboratory became more widely known, and as fresh problems requiring solution arose would necessitate the provision of extra accommodation and staff.

Early in the year detailed plans for large additions to the present building, and for practically the entire re equipment of the section, were submitted to Government, and these have received administrative sanction.

Widal's test—The value of this test would appear to be becoming better recognised. Seven hundred and eighty eight specimens were submitted for the agglutination test is comprised with 292 last year. In the great majority of these, 693, the test desired was for enteric fever. Five hundred and ten of these reacted to the typhoid bacillus in some degree, but less than half of that number showed the reaction at a dilution of 1-96. Almost all the specimens showing a reaction at 1-96 were derived from cases that turned out to be enteric fever. Reactions at a dilution of 1-32 were still reported but reactions at this dilution can only be regarded as indicating an incipient typhoid process or the residual result of a past illness. As in previous years, the tests were conducted by the microscopic method. As was the case last year a few specimens reacted positively to the Paratyphoid "B" organism. No positive results were got with Paratyphoid "A". I am informed that practically the opposite of this experience holds good in the north of India. Half the specimens tested against the germ of Malta fever give positive results, but no positive results were got with Gutter's Bacillus.

A much larger number of films were examined for the presence of malarial parasites, but the proportion of positive results was smaller than ever, only 8 per cent. A very considerable number of films were submitted for differential counts of the white elements. It used to be stated that 12 per cent of the large mononucleate cells was pathognomonic of malaria, but judging from the experience gained in these examinations this percentage is too low. Probably 20 per cent would be nearer the mark.

Kala azar—When an examination as to the presence of the Leishman Donovan body (*Leishmania donovani*, Patton) is desired, at least a dozen films should be sent. A negative result derived from the examination of a single film of peripheral blood cannot be relied on. Since in cases of Kala azar a positive result can be got from the examination of peripheral blood, if sufficient care and time be devoted to the search, the practice of taking material for examination by spleen puncture can hardly be considered justifiable any longer.

At the instance of Lieut Col Giffard, I made an investigation as to the presence of the organism of syphilis in stillborn foetuses of a particular type, which are excreted in a

macerated condition was commenced. A considerable number of such cases occur at the Government Maternity Hospital, Madras, and up to date 40 foetuses have been received. The results and notes of the cases are shown in Table II [Not reproduced—Ed.]

It will be seen that in no less than ten, that is, in 25 per cent of the cases, the spirocheta pallida was demonstrated. That in so large a proportion of the cases the condition was associated with the presence of the organism of syphilis seems to point to this organism being the cause of the condition in most if not all the cases and that the failure to demonstrate it may have been due to accidental circumstances. Such a cause may have been imperfect acquaintance with the technique of the method used in the preparation of the specimens, which is a somewhat complicated one. This idea is borne out by the distribution of the positive cases. Only three or 15 per cent occur in the first twenty, seven or 35 per cent occur in the second twenty. Another cause may be unsuitability of the condition of the case at the time of examination. It is more than likely that the parasite will cease to be demonstrable in the very early stages of putrefaction. The three which showed signs of putrefaction Nos. 4, 7 and 21 all give negative results, and it may very well be that others in which putrefactive changes were not noted were still so far advanced in the process as to have caused the disappearance of the organism. No. 10 was wrongly included in the series. The findings, whether positive or negative cannot be said to correspond with the history as elicited, but it must be remembered in this connection that a positive history positively indicates syphilis, while a negative history by no means excludes it. In the only case with a syphilitic history in both parents the organism was demonstrated in the macerated foetus. In two cases where the germ was found there was a history of syphilis in the father, Nos. 23 and 28, in the latter of these the history was a recent one. On the other hand a syphilitic history of the father is reported in cases 25 and 33 and the organism could not be demonstrated. Case 18 with a syphilitic history in the mother was also negative. In all the other cases whether the germ was present or not, no history of syphilis was obtained or nothing was learned in this respect. The investigation is being continued.

The notes of cases of Vaccine Therapy are also interesting, we quote a couple of cases —

Case No. 13 — This was a very severe case. The patient had come to Madras and underwent an operation for a condition of the eye requiring enucleation. Shortly after wards serious kidney trouble set in. The urine contained much pus, and there were temporary obstructions to the flow from kidney resulting in a hydronephrotic condition. This occurred on either side alternately and the patient's condition was most serious. On examining the urine an organism strongly resembling the pneumococcus was observed. An almost pure growth of this was obtained on hydrocele fluid agar but its cultural reactions were different from those of the pneumococcus. A vaccine was prepared. Meanwhile the symptoms had ameliorated under suitable local and medical treatment, but the suppuration and fever still continued. Under vaccine treatment the case rapidly improved and was shortly afterwards discharged cured.

Case No. 16 — This was a case of chronic catarrh of the frontal sinuses of six years' duration and associated with severe attacks of neuralgia. There was an almost constant clear watery discharge from the nose, from which an almost pure culture of *Streptococcus brevis* was obtained. After a few injections of vaccine prepared from this organism the discharge disappeared and when last heard of the patient was to all intents and purposes cured.

The end of the Report is taken up with detailed biological analyses of water supplies of Jails and of towns.

THE PASTEUR INSTITUTE, COONOR

THE large amount of good work done in this institute is seen in the *Bulletin* (No. 3, 1910) published under the authority of the Central Committee. The staff consisted of Major J. W. Cornwall I.M.S., Director, Capt. A. G. McKendrick, I.M.S., Asst. Director, and Dr. M. Kesava Pai, and Sub-ass't Surgeon S. R. Aiyar.

The report is a highly technical one and we may enumerate the various papers and refer all interested to the report itself —

1 Deviation of complement by fixed virus brain extract By J. W. Cornwall and M. Kesava Pai.

2 Reduction of Methylene Blue by fixed virus By J. W. Cornwall

3 Cutaneous reaction in antitoxic inoculations By J. W. Cornwall

HÄMOLYTIC DATA

1 Some factors which influence the lysis of erythrocytes by hypotonicity By J. W. Cornwall and M. Kesava Pai

2 Some facts relating to amboceptors By J. W. Cornwall and M. Kesava Pai

- 3 On the ponderability of amboceptor By J. W. Cornwall
- 4 Isolysins By J. W. Cornwall
- 5 Some facts relating to complement By J. W. Cornwall and M. Kesava Pai
- 6 The complementing power of homogeneous serums By J. W. Cornwall and M. Kesava Pai
- 7 Deviation of complement By J. W. Cornwall
- 8 The latent antilytic property of normal serum by J. W. Cornwall
- 9 Various factors which influence specific lysis By J. W. Cornwall and M. Kesava Pai
- 10 On the effect of the presence of a heated serum on a hemolytic system By J. W. Cornwall and M. Kesava Pai
- 11 Anaphylaxis By J. W. Cornwall

BOMBAY ASYLUMS

THIS Report written by Surgeon General H. W. Stevenson, I.M.S. is dated April until reached our table in July.

The number of inmates of the Asylums was 1,337, the daily average strength has 988, a figure which, when we compare the population of the Presidency with other Provinces in India, is larger than might be expected.

We quote the following extracts from the Report:

The number of deaths in the asylums was 126 as compared with 130 in 1909. The death rate in individual asylums closely corresponds to that of last year. In Nimpuda Asylum the death rate was again excessive, and there was no epidemic of cholera this year as in 1909 to account for it. The deaths are reported to have been due chiefly to diarrhoea (21) and debility (22).

Many of the patients on admission are in a miserable state through want of proper food and attention. Also the cure of sick inmates is exceedingly difficult but allowing for these the death rate at this asylum is larger than it ought to be and its situation is I think, responsible to some extent. During a heavy monsoon the place is very wet and inmates stand damp and chilly very badly. When the new asylum at Yeravda opens it may be possible to transfer some of these cases above ghatas for treatment.

The death rate at Hyderabad Asylum also was high during the year and the Superintendent reports cases resembling epidemic dropsy but differing in certain particulars from that disease as described by Manson and others.

One death from hydrophobia is reported from Colaba Asylum. The patient was bitten by a rabid dog, and though it once sent to Karsuli and treated there, he developed the disease and died one month and eleven days after his return.

The chief causes of mortality in the asylums generally were diarrhoea 27, debility 25, dysentery, pneumonia and tuberculosis 11 each and malaria 8.

The ratio of deaths to the daily average strength per cent was 12.8 against 13.1 in 1909.

"The superintendence of the asylums has been satisfactory throughout the year and the Subordinate Medical Officers have been well reported on with regard to the discharge of their duties. From several Superintendents the same representations are received regarding the Warder Staff. They are discontented and the only class of men which it seems possible to obtain is usually incapable of being taught the ordinary duties of a Warder in an Asylum. If a more intelligent individual is enlisted he soon leaves for better pay and more congenial work elsewhere. The rates for ordinary unskilled labour have risen largely during the past few years and a man of fair intelligence can easily obtain higher pay than he can as a Warder, and at the same time have much more liberty. It must be recognised that the work of an Asylum Warder, which means constant association with and continual care of inmates with no holidays, is one which no man who is worth anything will take up, unless the pay and other conditions are such as to compensate him for the life he has to lead."

Correspondence

CIVIL SUB ASST SURGEONS ENGLISH QUALIFICATION EXAMINATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR — The Government Notification G.O. No. 58V—173, dated the 29th November, 1909, Medical Department published by the Inspector General Civil Hospitals, U.P., on the 12th April 1910, which exempts the Civil Sub Assistant Surgeons who have passed the Entrance Examination from passing the English Qualification Examination for their grade promotion has caused much satisfaction to all those who are interested in it. It has really saved much trouble and worry to the candidates, who will not now be required to tread the

same thorny ground twice over. This rule may, however, be still more profitably extended by laying down, that even those Sub Asst Surgeons who have stood successful in the Entrance Examination in the English subject, if not in all, may also be entitled to this privilege. This would not be altogether a new reform in the department, as the candidates for the Military Sub Asst Surgeon class are given this concession at the time of their admission in the Medical School, Agri.

Will it therefore, be too much to ask from our gracious and just Government to introduce the beneficent principle in the case of Civil Sub Asst Surgeons also? We appeal to our kind and popular Inspector General, Civil Hospitals, United Provinces, to help us in this matter.

Yours, etc.,
A SUB ASST SURGEON

A CASE OF ANENCEPHALIC MONSTER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I was called to see a case of confinement on 24th June 1911, in consultation with the local female hospital assistant. It was a multipara having three children alive, and there was a history of twin births twice, the children dying on both occasions. As the woman was a *pura da nachin* I was not allowed to make an examination till it became absolutely necessary and was then forced to depend on my colleague's diagnosis. She informed me that the os was dilated enough to admit four fingers and the membranes were protruding, but she could not make out whether the head or any other part was presenting. I advised her from behind the screen to rupture the membranes and this she did. As soon as they were, ruptured liquor rushed forth and with it something hard descended. On examination she told me that probably the placenta was presenting, and there were some hard lumps which she could not make out and my examination was necessary. A whiff of chloroform was given to the patient and I put in my hand and felt something hard which could be caught with the fingers. I grasped it tight and brought it out and the body and legs followed immediately. To my surprise I found the fetus stillborn and an anencephalic monster. I tied the cord and preserved it in spirit in the hospital. The woman is alright. On the following day, at the suggestion of Capt W. Hogan, my Civil Surgeon, I requested my friend L. Banarsi Das, M.B., B.S., to dissect out the abdominal viscera through a cruciate incision and sew up so as to harden the specimen better as I have a mind to send it over to the Lucknow Medical College.

SHANKAR DASS, L.M.S.,
Asst Surgeon, Muzaffarnagar

A MEDICO LEGAL QUERY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I shall feel obliged if you or any of your readers will kindly let me know the source or the book from which I can know the average period, in tropical climate and ground like India, taken by the dead body when buried in the usual Indian fashion, to become completely disintegrated into dust except bones, or in other words a piece of ground has been dug—complete set of human bones found,—how long ago might the dead body have been buried?

A MEDICO

A CASE OF PUEPERAL ECLAMPSIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—The following case was that of a young Hindu woman, aged 17 years, and a primipara. Enquiries elicited the facts that she, being full term experienced colicky pains for 4 or 5 days previous to my being called in. The evening before my Sub Assistant Surgeon, Kamini Kumar Datta, had seen the case and found her in a semiconscious state, all other conditions were normal, and a few hours later she regained consciousness and stated she felt quite well.

The following morning 13th June 1911 at 8 o'clock I was called in and on examination could detect nothing except that the woman complained of a headache and appeared to be a bit dull. Fetal heart sounds were audible and position of fetus normal. The woman's pulse, respiration and temperature were normal, and she was not in labour. A purgative was administered. An hour after I was called again to see the case, and on my arrival found the woman in a comatose condition, pulse small and 130 per minute, the Sub Assistant Surgeon informed me that the woman had convulsions of an epileptic character just before my arrival. She had never had fits of any nature before this, and had been in excellent health all the time.

It was my intention to induce labour but before doing so I ordered a large soap and water enema to be given to empty the lower bowel, the result of the enema being good, severe

uterine contractions commenced immediately after and the child was born within an hour and the placenta followed 15 minutes after the birth of the child, which was quite healthy. Labour was perfectly normal and no artificial interference was necessary. A subcutaneous injection of morphine & grain was then given.

The woman's condition gradually improved, the pulse reduced to 100 a few hours afterwards but she lay in a comatose condition till 3.45 P.M. the same day, when she regained partial consciousness. At 4 P.M. the following was given by the month —

R		
Pot Bromide	grs vvv	
Chloral Hydras	grs xx	
Aqua ad	xx	

and repeated at midnight.

Fluid nourishments were given every two hours.

The woman had practically no sleep and had a slight attack of convulsions during the night.

On the morning of the 14th the case had greatly improved, the temperature was normal and the pulse 84 per minute, though she still remained in a semi conscious state throughout the day. The following was given every 6 hours —

Pot Brom	grs xx	
Chloral Hydras	grs xx	
Aqua ad	xx	

The patient had a very good sleep on the night of the 14th and regained complete consciousness on the morning of the 15th. The above treatment was continued that day and gradually reduced on the two following days and then omitted. The patient improved rapidly and was quite well again in about a week's time.

K W BLINKWORTH,
Asst Surgeon

RURAL INSANITATION IN BENGAL

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—I shall deem it a great favour if you kindly allow the following few lines to be published in the next issue of your widely circulated esteemed journal.

A Scheme for the Improvement of Rural Sanitation

An article on Rural Insanitation by Bibu Satkari Ganguly, Sub Assistant Surgeon, was published in the *I.M.G.* for March last. Several theories, it is true, have been advanced on the subject but they have seldom received support either from the Government or from local bodies. The matter no doubt demands early and serious attention. The peasantry forming the bulk of our population live in villages, and it cannot be gainsaid that the unhealthy condition of our villages is rapidly diminishing their number and vicinity. The insanitary condition of our villages is mainly due to (i) want of good drinking water, (ii) bad drainage and (iii) growth of jungles.

The first point in connection with the improvement of the condition is where and how to begin. The writer is of opinion that "the beginning should be from the people". If he means that the people should first move in the matter before Government takes any steps, I cannot endorse his view. Our rural population consists mostly of peasants. The educated and well to do among the villagers live in towns. The peasants are generally ignorant and ignorance brings into train of superstitions and obstinate adherence to old world ideas. The Indian peasant takes the existing mode of thing as inevitable. It is his lot to live in jungle covered villages and drink filthy water.

Death and disease come by piecemeal, and no human effort can retard their progress. A population with such ideas is not likely to take interest in matters Sanitary, and one must wait and wait too long before such people take steps to improve the sanitation of our villages. Moreover, the village communities are in a state of disintegration. Party spirit runs high in our village combined action is not easy. If one party proposes an improvement, another will put in opposition. The result generally is that the proposed improvement is not effected, only the party quarrels are fomented and internal dissensions accentuated.

It is therefore necessary that the Government should take the initiative and the ingenuity of the writer requires that it should be taken up without delay. Of course, the efforts of Government will not have the desired result unless the people co-operate with the Government and supplement these efforts. But if Government takes the initiative, these, with the education of the people, will gradually come in. The Government measures will themselves have an educative influence upon the people. Once they enjoy the benefits of these measures, they will realise the importance of sanitation.

The Panchayet system can be profitably utilised in this respect, and suggestions I would like to advance with regard to this, are the following —

1. That every President Panchayet should have a sub committee under him—which should be called 'The Sanita

2 That the chowkidars tax should be enhanced a little, and the chowkidars law should be so amended as to authorise the Panchayets to collect the required for the payment of chowkidars as well as for the sanitary improvement purposes

3 That there should be a tank in every village reserved for the purpose of drinking its water and where there is no tank one should be sunk with the money at the disposal of the Panchayet

4 That there should be a date fixed when the chowkidars should visit the Panchayets once or twice a week and the Panchayets should then enquire of them about the sanitary condition of the villages they are in charge of

5 That wherever there are jungles, filthy drains, etc. the Panchayets should visit such places and make necessary arrangements of removing these defects

6 That wherever the villagers are too poor to pay the tax, the Panchayets should make such people give physical help instead

7 That there should be a separate account for this which should be checked at the Sub Divisional office

8 That the President Panchayets should get occasional instructions from the Civil Surgeons and Sub Divisional Officers on tour and communicate these to the members of Panchayets, who should in their turn see that the orders have been carried out

9 That quinine and cholera specifics should be kept in reserve with the Panchayets for distribution

I would also suggest that the vaccinators should be entirely subordinate to the Panchayets and should be allowed 2 or 3 permanent coolies for each union who is well as chowkidars will be responsible to see that all jungles are cut down, all drains kept open, and that there may not be any water logged area within the union

No extra clerk is necessary for the present the dispensers, if selected with care, will be able to serve as clerks under the Panchayets. The chowkidars will assist the Panchayets in collection as they used to do before President system was adopted

This would be a small beginning and an efficient one—from which people will reap large benefit in 30—40 years. Unless Government moves in the matter, the malaria stricken villages will in no time be wholly depopulated. The next census will, I am afraid to think, bear out the fact

Yours, etc.,

NARAIL,
The 3rd July 1911

ATAL BEHARI GHOSH,
Sub Assistant Surgeon

THERAPEUTIC NOTICES

'EPININE' AND COCAINE HYDROCHLORIDE

'EPININE,' the remarkable synthetic vaso constrictor and haemostatic recently introduced by Burroughs, Wellcome & Co., has now been issued in combination with Cocaine Hydrochloride. 'Epinine' acts in all respects like preparations of the supraspinal active principle, with the added advantages of greater purity and stability, and more persistent and uniform effect. In this new product 'Epinine' and Cocaine Hydrochloride it is present in such proportion as to enhance the effect of the local anaesthetic without producing any risk of sloughing through excessive vaso constriction. Such a preparation should be of great utility in dental work.

'TABLOID' 'XIXA' AND CAFFEINE is issued by Burroughs, Wellcome & Co containing 4 grains of 'Xixa' (Acetyl Salicylic Acid) and 1 grain of caffeine. It combines the specific antipyretic and analgesic action of 'Xixa' with the stimulant effect of caffeine on the circulation. It should, therefore, be of value in cases of pyrexia where the heart's action is weak. The diuretic action of the caffeine is also useful in febrile conditions. The dose is from one to five twice or thrice daily.

We have received two new catalogues of Hearson's Patent Biological INCUBATORS in the cultivation of micro organisms. The new catalogue is very complete and should be in the hands of the Director of every Laboratory. The same firm, C. E. Hearson & Co's., 285, Regent Street, London, are sole agents for M. Jourin's HIGH SPEED CENTRIFUGES, electric water and hand. Full details are given in these well got up catalogues.

Dr Heasey's Treatment of Blackwater Fever commences treatment by giving an aperient —

'Palatinoid' Colomel gr. 5 or a teaspoonful of Epsom Salts Give two 'Bipalatinoid' No 584 with a large draught of fluid every 2 hours until urine clear, then every 4 hours for 24 hours.

For Vomiting A mustard plaster to the pit of the stomach, saline enema, hypodermic injection of Morphia gr. 1 (this is the best and most reliable method)

Burley water (not plain water) to be taken in restricted quantities and at frequent intervals. When vomiting has

been allayed continue the administration of 'Bipalatinoid' No 584 as before. (The remedy would be useless if vomiting continued and was not arrested by the means suggested. It is frequently aggravated by indiscretions as to proper food or drink.)

Diet. Burley water, meat juices or essences later on milk and burley water in equal parts, peptonised food chicken broth.

Stimulant. Brandy only when pulse is over 120.

General Directions. Avoid all acid drinks, the patient on no account should be allowed to sit up, the bladder and bowels to be relieved in recumbent position.

To reduce temperature cold sponging is the best method.

The Bipalatinoids are made by Messrs Oppenheimer, Son & Co., Queen Victoria Street, London, E.C.

Service Notes

We extract the following editorial note from the *Pioneer* (July 16th). The *Pioneer* has fought our battles before and may be relied on to see matters clearly and see them whole. This extract ably sums up a recent correspondence, started by an egregiously one-sided letter signed *Mene* —

The letters which are appearing in our correspondence columns regarding the Indian Medical Service are of special interest at the present time as it is understood that Lord Morley's suggestions for sacrificing that service in order to bolster up an imaginary independent profession have come to nothing. Now comes an attack on the I.M.S. from a new direction vigorous and uncompromising, but of quite a different kind. We do not, however, believe that the Government of India will be so far led astray as to admit that any case has been made out for the drastic action which one of our correspondents advocates. The Indian Medical Service has a splendid record both in peace and war. It has never failed to meet the demands made upon it and the high character of its officers has been steadily maintained. In these days of 'devolution' it is somewhat surprising to see a proposal made for centralisation on an unprecedented scale regardless of the peculiar wants of India. From a military point of view all that is needed is the establishment of station hospitals for Indian troops, a change that the I.M.S. have advocated for some time past. It should now be pushed forward and should be considered in connexion with the plans for economy in Army administration. We feel bound to enter a word of warning when proposals are made for depriving the Indian soldier of the services of medical officers whom he likes and trusts, men who are familiar with his language and customs, his religious prejudices and his mode of life. Ill-considered action in this direction might have grave results and we are confident that no one will recognise this more quickly than the present Commander-in-Chief who has unrivalled knowledge of the sepoys and his ways. Sir O'Moore Creigh has shown his sympathetic interest in the welfare of Indian troops by his scheme for housing them in comfort, and he must naturally desire to see their health still looked after by medical officers in whom they have full confidence. As to the civil side of the Service, its position is well explained in a letter which we publish to day the multifarious duties attaching to Civil Surgeonies are detailed, and it will be seen that these demand special qualifications which none but officers of Indian experience can possibly possess. The Indian Medical Service is too securely based to be shaken by attacks from the India Office or by the one-sided criticisms of reformers in a hurry.

PROMOTION into the selected list of Lieutenant Colonels, I.M.S., is going up ice, but very irregularly as regards the Presidencies. In the July Army List the last officer on the selected list is Lieutenant Colonel Willan Dawson who entered the service in April 1886, the last man in Madras is Lieutenant Colonel E. H. Wright who entered the service in March 1890 or a whole year later than the Bengal man, and the last appointed man in the Bombay Service is Lieutenant Colonel H. C. L. Arinn who entered in March 1888 or two years later than the Bengal man. A few more appointments are due, i.e. in Madras, i.e. Lieutenant Colonel Van Gezel, I.M.S., gone home to an appointment at the India Office in Bombay. Lieutenant Colonel A. Milne has retired, and in Bengal Lieutenant Colonel J. W. Rodgers will soon go. The Lieutenant Colonel list is headed by a long line of Bengal men, many of whom will have long to wait.

SURGEON MAJOR GEORGE MARR Madras Medical Service retired, died on 19th April 1911. He was born in 1826 educated at King's College, Aberdeen, where he took the degrees of M.A. in 1850 and M.D. in 1854, also the L.R.C.S.

(Edin) in the latter year, and entered the I M S as Asst Surgeon on 24th January 1855. He became Surgeon on 28th January 1867, Surgeon Major on 1st July 1873 and retired on 1st March 1876. The Army List resigns him no war service.

SURGEON MAJOR DAVID SIMSON, Bombay Medical Service, retired, died on 2nd April 1911. He was educated at Edinburgh, where he took the M D and entered the I M S as Assistant Surgeon on 10th February 1859, becoming Surgeon on 10th February 1871, and Surgeon Major on 1st July 1873, and retiring on 1st January 1878. The Army List resigns him no war service.

THE following Captains, I M S, are promoted to be Major I M S —

W E McKechnie, H D Pelle, D H F Cowin, W H Tucker, C S Lawson, D N Anderson, M N Chaudhuri, of the batch with first Commissions dated 27th July 1890, and the following Captains receive accelerated promotion to Majors, I M S —

A C MacGilchrist, J W D Megaw, C M Goodbody, R Steen, F F Elwes, E A C Mathews, L E Gilbert, T G N Stokes, H M Mackenzie, W O S Murphy and C C Muirson.

Some of the omissions are remarkable.

LIEUTENANT COLONEL C H BPPFORD, M D, I M S (Bengal) is granted, with effect from the 18th April 1911, combined leave for six months, i.e. privilege leave for one month and seventeen days and special leave on urgent private affairs for the remaining period.

The Home Department Notification No 466, dated the 12th April 1911, is hereby cancelled.

LIEUTENANT COLONEL H R WOOLBERT, Indian Medical Service (Bengal), and Agency Surgeon of the 1st class was granted privilege leave for six weeks with effect from the 1st June, 1911.

THE services of Captain Buckley, M D, FRCSE, I M S, are placed temporarily at the disposal of the Government of the Punjab for employment on plague duty.

THE services of Captain A P G Lorimer, M B, I M S, are placed temporarily at the disposal of the Government of Madras.

THE services of the undermentioned officers are placed permanently at the disposal of the Government of the United Provinces —

Captain Norman Septimus Wells, M B, I M S
Captain James Drummond Graham, M B, I M S

MAJOR H G MELVILLE, M D, I M S Professor of Materia Medica, Medical College, Lahore, is granted furlough for one year, with effect from the 3rd October 1911.

MAJOR G MC C SMITH, M B, I M S, is appointed to officiate as Professor of Materia Medica, Medical College Lahore, during the absence on furlough of Major H G Melville, M D, I M S, or until further orders.

THE services of Captain James Smalley, M B, I M S, are placed temporarily at the disposal of the Government of Bombay.

THE services of Captain W Tull, M D, I M S, are placed permanently at the disposal of the Chief Commissioner of the Central Provinces.

THE following I M S Officers are promoted to be Lieut Colonels from 29th July 1911 — viz., B H Dear, B C Oldham, R Bird C I F, S Browning Smith, G H Frost, E Wilkinson, G F W Ewens, C Duei, H S Wood, T W Irvine, J Entrican, W G Pridmore, C Donovan, J Penny, and D H McD Gravies, with first Commissions, dated 28th July 1891.

LIEUTENANT COLONEL C DUER, M B, FRCGS, I M S, Civil Surgeon, Simla (West), is granted privilege leave for one day in extension of the privilege leave for one month and fifteen days granted to him in the Home Department Notification No 1262, dated the 23rd November 1910.

MAJOR J M WOOLLEY, M B, I M S Senior Medical Officer, Port Blair, is appointed to be an Assistant Superintendent in the Settlement so long as he holds his present office or until further orders.

COLONEL WILLIAM O'HARA, Indian Medical Service, Madras, has been permitted by the Right Hon'ble the Secre-

tary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 7th June 1911.

LIEUTENANT COLONEL ALFREDER MILNE, M B, Indian Medical Service, Bombay, is permitted to retire from the service subject to His Majesty's approval with effect from the 25th July 1911.

Lieutenant Colonel Milne entered the service in April 1881, and has for years past been employed as Assay Master in the Bombay Mint, where he has been succeeded by Lieutenant Colonel Lloyd Jones, I M S.

CAPTAIN W H DICKINSON is promoted to be Major I M S, with effect from 28th January 1911, this means that Major Dickinson has received his accelerated promotion.

LIEUTENANT COLONEL J SMITH, M D, PMO, Secunderabad Brigade, has his promotion dated 7th June, i.e. Colonel O'Hara.

CAPTAIN R H BOTT, I M S, FRCGS, acts as Professor of Midwifery, Lahore Medical College, vice Major Heald, granted furlough. Captain Bott is a specialist in advanced operative surgery, Quetta Division.

THE Hon'ble Surgeon General Percy Hugh Benson, M B, Indian Medical Service, Madras, is permitted to retire from the service, subject to His Majesty's approval, with effect from the 26th July 1911.

LIEUTENANT COLONEL E W HOKE, Indian Medical Service (Bengal), an Agency Surgeon of the 2nd Class, is granted privilege leave for two months and ten days, combined with special leave for three months and twenty days, with effect from the 8th June 1911, under Articles 233 and 316 of the Civil Service Regulations.

MAJOR F A SMITH, Indian Medical Service (Bombay), an Agency Surgeon of the 2nd Class, is posted, on return from leave, as Agency Surgeon, Eastern States of Rajputana, with effect from the 8th June 1911.

THE services of Captain B B Paymaster, I M S, are placed permanently at the disposal of the Government of Bombay.

THE services of Captain T S B Williams, M B, I M S, are replaced at the disposal of the Foreign Department, with effect from the 20th May 1911. The Home Department Notification No 641, dated the 1st June 1911, is hereby cancelled.

COLONEL R B ROE, I M S, is transferred from being P M O, Allahabad Brigade, to be P M O, Karachi Brigade.

MAJOR A E BERRY, I M S, is appointed to be specialist in Ophthalmology, 5th (Mhow) Division, from 5th June 1911.

CAPTAIN J W LITTLE, I M S, is conferred as an Agency Surgeon, vice Major C H Bowle Evans, I M S, who has left the Foreign Department.

CAPTAIN J C G KUNHARDT, I M S, on special duty under the Sanitary Commissioner with the Government of India, is granted three months' privilege leave, with effect from the 15th July 1911, or from any subsequent date on which he may avail himself of it.

COLONEL H HFNDLFY, I M S, recently appointed P M O, Sirhind Brigade, was soon after appointed Deputy Director General with the P M O, Indore, vice Col French Mullen, I M S.

CAPTAIN S H BINGESS, I M S, and Capt A G Coull, I M S, are appointed Specialists in Advanced Operative Surgery.

LIEUTENANT J W BARRETT, M B, and Lieutenant M L Puri, I M S, are promoted Captains, I M S, with effect from 8th March 1911.

THE Commander in Chief in India is pleased to make the following appointments —

Divisional Staff — Lieutenant Colonel C N C Wimberley, I M S, is appointed Staff Officer, Medical Mobilization Stores, 6th (Poona) Division, with effect from the 22nd May 1911, vice Major T A Granger, I M S, vacated.

Captain K W Mackenzie to be specialist in Midwifery and Diseases of Women and Children, 5th (Mhow) Division, with effect from 10th July 1911.

Original Articles

STAFF TOURS AND THEIR USES

By PATRICK HEHIR, M.D., I.R.C.S. (Ed.),
LIFUT COL., I.M.S.

Definition—*Staff tours* or *Staff rides* consist in working out on the ground without troops strategical and tactical problems, and problems in staff duties—the commanders, staff and heads of administrative services are represented by officers, the troops and impedimenta are imaginary. The director in chief prepares a scheme of the operations with general and special ideas upon which the work of the staff tour is based.

Object—The object of staff tours is to train higher commanders, staff officers, and those who may be appointed to command or to the staff.*

Instructions relative to the mode of locomotion, hour, date, and place of assembly, dress to be worn, arrangements regarding camp and messing, books and stationery required, postal arrangements, and other details are issued to those taking part in the staff tour some days before it begins. Other preliminary requirements are—the preparation of a scheme, appointment of a directing staff, and selection of officers to attend.

Officers representing all branches of the military service are selected for staff tours, including—director-in-chief with two directors in large staff tours, or director with two assistant directors in smaller ones, general officers commanding the opposing forces, or one general officer commanding if only one force is represented, each with three or more general staff officers, A.A.G., A.Q.M.G., P.M.O. of the force, P.M.O.'s of divisions, S.M.O.'s of Brigades, O.C.'s field ambulances and Sanitary Officer, C.R.E., O.C. mounted troops, O.C. artillery, Brigadiers each with his brigade major, camp commandant, etc.

The director in chief or director is appointed to conduct the instruction of officers attending the tour. For a double staff tour the director in chief adjudicates between the opposing forces. He controls the course of the staff tour by instructions issued to the directors of the two sides. When the number of officers is large, the officers are subdivided into parties of 5 or 6 each under an officer of the directing staff.

A camp commandant accompanies the tour or two when there are opposing sides. He arranges about the encampment of the officers, messing, transport of luggage, etc.

The length of time occupied in staff tours for formations up to and including a division seldom exceeds four days, exclusive of the day of assembly and day of departure, and exclusive of the preparatory work with the appreciation, for smaller bodies of troops usually only two or three days are occupied in the tour.

Method and punctuality are essential in the successful carrying out of a staff tour. A definite programme is made out and a time-table followed, every waking hour during the staff tour is filled up with work. The following, or some modification of it, is the usual daily programme adopted—

Breakfast	8 A.M.
Rest of Day	Reconnaissance and field work as may be ordered
3 P.M.	All work to be handed in to the directing staff
6 P.M.	Conference, Narrative issued
7.30 P.M.	Dinner
8.45 P.M.	Orders written for next day, etc

The conference is often held after instead of before dinner, and may go on until midnight.

A preliminary conference is usually held in which all officers are instructed as to the general scope and object of the tour.

Staff tours are *double* or *single*. In double staff tours opposing forces are represented. In single staff tours only one side is represented, the director then conducts the enemy's operations. Staff tours for brigades must necessarily be single because of the few officers assembled, and even divisional staff tours are sometimes single on account of the absence of telegraphic communication, expense of the tour, and for other reasons.

The director in chief or director selects the area of operations and draws up a scheme to be worked out. In the elementary schemes there is, as a rule, no enemy represented, the director manipulates the moves of the enemy so as to secure the best instruction, but he lays down and writes out the movements of the enemy before the beginning of each exercise.

When both sides are represented by officers, the latter are separated into two parties, and each is under the charge of a director with directing staff officers. Each party assembles at some place near the scene of operations where they encamp. The director in chief divides his time between the two parties, keeping closely in touch with all the movements of both forces, and giving his decision on all occasions where contact with opposing forces takes place. At the conclusion of the tour, or at such other times as he may consider necessary, he holds a conference of both parties on the ground, and carefully discusses the narrative of the operations, giving his decision on the general result.

At the beginning of the tour the forces may be some 50 or 60 miles apart, when the initial strategical move is made. In the smaller staff tours, which do not, as a rule, deal with abstruse strategical problems, the forces are brought into contact on the day the tour commences. When the main bodies come into close contact, it may be necessary for the director to select one or more positions near the opposing forces. Those are reconnoitred for attack and defence by both sides on the last day but one of the staff tour. Knowing the intentions of the two commanders, the director must then judge on which of the positions the final action would be most likely to take place, on this position the final conference is held, the attack and defence being discussed on the actual ground over which the operations were carried out. The director gives his own opinion of what has taken place, he bases it on the tactical distribution of the forces and criticises such errors as may have been brought to light.

The foregoing account of the course adopted in a staff tour is not stereotyped, but in the main it is the routine followed.

The Scheme—When ordered to accompany a staff tour we receive the scheme, which consists of *general* and *special ideas*, and a map of the area in which operations are to take place. These are issued ten days or so before the tour is to begin, and the *appreciation* is to be submitted a few days before starting. Usually the date of the situation to be appreciated coincides with the actual date of commencing the staff tour, when this is not the case, a narrative bringing events up to date is compiled.

"The scheme may be purely imaginary or based on some episode in history. Whichever method is adopted, it is to be strategically and practically sound, so as to avoid teaching false principles, and is so constructed as to produce realistic situations."

The *general idea* contains knowledge which would in war be in possession of both combatants, it is not a confidential document. In a staff tour much valuable instruction will be obtained during the initial stages of the supposed operations, when strategical plans must be formulated. The actual problem for solution, may be a side issue of a greater problem, the bearing of which on the lesser problem must also be considered. It follows that the *general idea* may frequently be a

* Training and Manoeuvres Regulations 1909, p. 12.

+ By India Army Order No. 133 of 6th March 1911, important changes have been made in the designations of medical units in the field. In this paper the new nomenclature is adhered to.

document of considerable length, and need not be confined, as in the case of manœuvres, where it is desirable to eliminate extraneous matter, to stating the situation in the fewest possible words and simplest language. It is therefore necessary to include in the general idea all data which could affect the solution of the particular problem, e.g., mention may be made of the general political situation, the characteristics of the opposing forces, the morale of the troops, the attitude of the inhabitants in the area of operations, the security or otherwise of the lines of communication, the value of the capital both politically and in respect of the military resources of the country, etc.

The special ideas contain the immediate problem to be solved and give the information which each commander might in war be assumed to possess of his adversary's position and movements. The special ideas consequently differ for each side, and are confidential documents. They give the details of the strength of the forces supposed to be engaged.

The Medical Appreciation—Upon the information supplied in the general and special ideas we write the *Medical Appreciation*. This is in reality an essay or memorandum on everything that bears on the medical questions involved in the operations. Even if such a memorandum is not required of us, we should write one out for our own edification. It is usually written by the senior medical officer present on the tour who represents the principal medical officer of the force.

In the writing of a Medical Appreciation there are two phases. (1) The thinking out of the whole problem and systematising its solution in the mind, and (2), the writing of the solution in detail in a methodical way.

We should first read the general idea carefully through several times, and then the special idea. This latter calls for particular attention. In formulating our solution of the problems it presents, we should arrive at some notion as to what military operations against the enemy are likely to be carried out. During the study of the scheme we are made aware of the necessity of our possessing a general though elementary knowledge of strategy and tactics, by which we should be able to anticipate possible changes of strategy or tactics on the part of generals arising during the development of the campaign, each such change requiring, of course, a corresponding change in the disposition of the various parts of our field ambulances and medical personnel.

We should study the maps, which give the particular characters and physical features of the country to be worked in, especially noting the chief roads, bridle paths, railways, rivers, hills, trees and cultivation. We should on the maps locate the position of our own force and that of the enemy.

In writing the appreciation we should give a full account of the present state of affairs, a description of our force, its composition and strength, including the situation of all troops as set forth in the special idea, a complete list of the field ambulances and medical personnel required in such a force, including the medical personnel with the various battalions, apart from those with the field ambulances of the force. The medical organisation of the force at the front is to be detailed, the medical arrangements on the lines of communication are to be set forth, as well as the position of the various medical units, and medical arrangements for the line of march. The natural features of the country, including geology and topography, together with its meteorology will be described, and also its supplies, especially of fresh foods.

The number of the lines of communication, hospitals, the British and Native general hospitals at the base or bases, the resources of the general medical stores depôt at the base or bases, and of the field medical store depôt on the lines of communication and with the force in the field, details as to the number of existing ambulance tongas available for removing the sick and wounded, likewise of the number of returning empty vehicles of the supply echelons that are likely to be available

for this purpose, also ponies, dandies, country carts, ambulance trains or empty supply trains on the line of railway (if any), boats or steamers on rivers or steamers on the sea coast, the particular roads, times, and places at which these means of transport will be available, the probable number of men that will be wounded, subdivided into those that will be able to walk, those requiring sitting and lying accommodation, and those that cannot be moved, the method to be adopted in evacuating the field ambulances at the front, route that will have to be followed by the sick and wounded to neighbouring towns or villages or to the field ambulances at the rear, probable amount of sickness likely to occur in the force (which will be in accordance with the healthiness or otherwise of the locality, season, nature of the climate, etc.), the Medical Appreciation will also refer to the hygienic measures needing attention and contain recommendations regarding the prevention of disease, the rations of the force, hygiene of tent life, billets and bivouacs, number of blankets and kind of clothes required by troops and followers under the conditions of the proposed campaign, disposal of dry refuse, conservancy arrangements, water supplies, etc., as circumstances indicate. It is necessary to acquire information regarding the health of the local inhabitants, and the presence or absence of endemic or epidemic disease.

If writing as principal medical officer of the force, a statement is to be expressed as to the number and location of the field ambulances from the beginning, and taking the scheme into consideration, where, in one's opinion, they are likely to be required after operations have begun. Any other points of special medical interest likely to arise in connection with the operations are to be mentioned.

In connection with the foregoing remarks on the Medical Appreciation a few subjects appear to call for some explanation.

The subject of *casualties from wounds* to be expected will be commented on in the appreciation after taking into account the strength of the opposing forces, the nature of the weapons used, and the character of the fighting that is likely to occur. The general rule in an engagement where modern firearms are employed is to assume that 5 to 20 per cent of casualties will probably occur in an engagement, of whom 20 to 25 per cent will be killed, of the wounded 20 per cent will probably be able to walk, 60 per cent will require sitting up accommodation, 15 per cent will require lying down accommodation, while the remaining 5 per cent cannot be moved.

In estimating the *infectious* to be sent to the rear we should not forget the daily waste to the force from sickness on the march, when stationary, and during fighting, the average of which in a healthy force under favourable conditions may be put at 3 per 1,000 of strength (troops and followers). This does not, of course, include those temporarily inefficient from trifling ailments who may be put on baggage guard or light duty until well. In forward marches all cases of serious sickness must be sent back, as must also the sick of flank marches and during retreats. It is not so urgently necessary to send non-infectious cases of sickness towards the base in stationary camps or during periods of inactivity. The estimate above given may fall very short of the sickness rate if the troops are unhealthy, if any endemic or epidemic disease exists, or if the area of operations is unhealthy, and the season of the year insanitary.

It will be remembered that the removal of the sick and wounded from field ambulances at the front to the base in our Indian frontier wars has hitherto seldom been according to any definite plan. A field ambulance or a section thereof is dropped whenever occasion arises on the lines of communication and becomes a non-dictated stationary field ambulance. It is highly probable that in future campaigns of any dimensions these hospitals will be organised on the basis of the stationary ambulances of

the Home Service with their personnel, including nurses in British field ambulances, and arranged along the lines of communications after a definite plan previously well thought out.

Hitherto we have had no clearing hospitals comparable with those of the field ambulances of the Home Army, but every field ambulance has now in each of its 4 sections one lightly equipped sub section which will be provided with fast moving transport (mule tongas, riding mules) and be employed to evacuate the sick and wounded from one field ambulance to another along the lines of communication and to bring up medical and other stores.

In all movements of sick and wounded towards the base, the plan recommended in the Medical Appreciation must be reasonably practicable, and in movements by railway the accommodation of the latter must be equal to the work it is asked to carry out. The principal medical officer will give the calculations showing the nature of the accommodation and capacity of the trains, the number of the sick and wounded and the kinds of accommodation they require, and the number of trips the trains can make. Similar calculations are to be made in regard to ambulance tongas, empty supply vehicles, country carts, ponies, etc., conveying the sick and wounded to the lines of communication or the rail head.

The P M O of the force has to consider whether the troops are moving in one column or more than one column. When moving in several columns, we endeavour as far as practicable to keep the sick that are proceeding towards the rear on the most central main road, field ambulances of the columns are also, as a rule, moved along such a road.

We should remember that any detached brigade or division may be fighting in a different area to the chief army, and away from the ordinary lines of communication. In this case it is necessary to arrange independently for the evacuation of the sick and wounded, hence the detached force must be provided with its own medical personnel and field ambulances, ambulance transport hospital trains or improvised trains, etc.

The Medical Appreciations are gone over by the director who criticises them favourably or unfavourably according to whether he considers they would make for success or failure in war. This criticism is both constructive and destructive, and in regard to the former the right solutions are added and the Regulations on the subjects quoted. The corrected appreciations are returned to us when the staff tour begins.

A comprehensive view of the requirements in knowledge of an administrative Medical officer in the field is obtained in writing—a complete and correct Medical Appreciation of a well thought out scheme. The scheme has to be studied in all its parts and all the books and Regulations used in warfare must be worked up. By this we learn the compositions and strengths of divisions, brigades, battalions of infantry and cavalry, batteries of artillery, etc., their complement of field ambulances, and the right position of these ambulances from the front to the base, their respective positions at different times, we also become acquainted with every detail connected with each field ambulance and especially with the ambulance transport attached to it.

General Course of the Tour.—The tour usually commences with the execution of reconnaissances by the commander or his staff officers, or when reconnaissances are unnecessary, it may begin by working out orders for the day. The effect of these orders are considered by the director who will cause a narrative of events up to that time to be prepared for each side, including a summary of the imaginary intelligence received.

The Narrative.—This is issued at intervals as the operations progress. It is so compiled as to give the probable results of the actions of the different commanders as indicated by their orders, but it may be necessary to produce a certain desired situation to introduce unforeseen events on the receipt of unexpected in-

telligence. Before the preparation of the narrative the director examines, amongst other things, the arrangements for the medical services, disposal of the sick and wounded, etc. The narrative details the events which have happened since the issue of the last narrative and gives the position of all troops so far as the commander concerned is likely to know it.

The narrative is identical with the special idea on manoeuvres, it indicates a new phase, or states a further development of the problem and calls for action.

Indoor Work.—On receiving the narrative we write a brief Medical Appreciation of the position as it then presents itself. As P M O of the force this will include general instructions regarding ambulances, clearing away sick and wounded from the force, and probably some arrangements for getting a clearing hospital at the top of the line of communications, or to rail head.

There is a vast difference between the Medical Appreciations prepared and written deliberately in peace time, and those to be written promptly in the field. In the former we are not hurried and can introduce statements regarding every matter that concerns the health of the army, and the care of the sick and wounded. In the field the time at one's disposal and at the disposal of the criticising officer is very limited, and usually only gives opportunity for considering the more important medical factors. As in the case of the original Medical Appreciation, however, it should be prepared in a more or less definite way, "the habit of forming appreciations teaches an officer to arrange his facts methodically and trains him to arrive rapidly at a logical and sound conclusion."

The criticisms of the director on the medical narrative submitted are made the same day or evening and returned to us.

During the *indoor work* of a staff tour, we may at any moment be asked to write a Medical Appreciation of the new situation that has developed, or to write an essay or give an address to the officers taking part in it on any of the following subjects—

General organisation of the medical services in the field in Indian Frontier warfare (F S M, M, pp 16, 12-22), composition as regards equipment and personnel of field ambulances, British and Indian (F S M, M, App V, how they are divided and subdivided (F S M, M, § 5), establishment and transport required for a field ambulance as a whole, a complete section of it in a cavalry field ambulance and in a field ambulance (F S M, M, App V, Table XIX), number of field ambulances with divisions and divisional troops (F S R, I, App XXIV), Staff College Provisional Memoranda, 1911, pp 68 to 82), camp sanitation of a division, a brigade, single battalion, or a field ambulance camp, principles of distribution of stationary hospitals on the lines of communication, then functions in semi civilised warfare or on the frontiers (F S M, M, § 136-142 and § 81-88), duties of officers commanding field ambulances (F S M, M, § 114-116, and § 124-130), of medical store keepers (*Ib*, § 118, (a), (b), (c), (d) and 119), of pack store N C O's (*Ib*, § 117), various ways in which A B C men may be used on field service (in administering first aid, manual ambulance, as stretcher bearers, dandy bearers in pitching and striking tents, etc.), formation of a field ambulance in a brigade camp, its position, and area occupied (Indian Appendix to Combined Training, 1905), various lines of medical assistance with a field army (F S M, M, § 2), the medical equipment and medical personnel of a corps unit (*Ib*, § 3, and App III), composition of a bearer company (*Ib*, App IV), duties of a bearer company* (*Ib*, § 102-103), the

* One bearer company forms an integral but detachable part of each field ambulance. It is never employed as such except during training and actual fighting, when it affords aid to the wounded, brings the wounded from the collecting station to the dressing station and from the dressing station to the field ambulance. The bearer company always rejoins

functions of a field ambulance (*Ib*, § 5), how field ambulances are maintained in peace times (*Ib*, § 18-25), the composition and functions of hospital trains* (*Ib*, App XII, and § 17, 56), functions of general medical stores depots (*Ib*, § 158-161, also § 12, 59), location and functions of general hospitals† (*Ib*, § 11, 143-157), equipment and personnel of a hospital ship‡ for British troops (*Ib*, App X) and Indian troops (*Ib*, § 60), functions of clearing and stationary hospitals (*Field Service Regulations*, Part II, *Organisation and Administration*, pp 104-106, India Army Order, No 133 of 8th March 1911), position of field ambulances on the march, before fighting begins and on completion of a victory (vide infra), replenishment of medical and surgical appliances at the front, principles to be followed in the selection of dressing and collecting stations, and conditions affecting the arrangements for evacuation of the sick and wounded (vide infra), report on the sick and wounded collected and transferred to the line of communications, entraining of a large convoy of sick and wounded, or embarking a convoy in a hospital ship, or improvised ordinary transport vessel, reinforcement of overburdened field ambulances at the front, methods to be adopted in acquiring additional transport beyond that of the field ambulances for sick and wounded, etc, etc.

The P M O of the force may be asked to draft standing sanitary orders for the force, write a detailed description of the medical organisation he proposes to adopt during the expedition, write draft orders for insertion in operation orders or his orders to divisional P M O's, the P M O of a division may be asked to carry out similar tasks and to write his instructions or orders to O C's field ambulances on the eve of an engagement, the O C of a field ambulance may be required to write his orders for the day (these will, of course, be the ordinary routine orders), the sanitary officer of a division may be asked to report on the sanitation of a division, brigade or corps unit on the line of march, any medical officer on the tour may be asked how medical orders are issued in a division or brigade, etc (*F S Reg*, Part I, *Organisation*, 1909, pp 18-5), the use of certain returns, such as I A F A6, A7, A28, A29, I A Books—27A, 27B, I A F's, 110, 37, etc, the uses of staff tours or manoeuvres to medical officers, how the wounded are aided and collected in the battlefield, arrangements for evacuating field ambulances with the force at the front, etc, etc.

The above list consists mainly of problems that have been set one personally on staff or regimental tours, and of questions asked by military officers for their own information during staff tours, a few of the questions are those which other medical officers have told me they had to answer on staff tours. It will be seen that any one of the subjects referred to requires a certain amount of accurate knowledge. Considering the wide scope of the subject of field medical organisation in all its branches, the above list embraces only a comparatively few of the problems that may be asked or set during indoor work on a staff tour.

its field ambulance after its duties in an engagement have been completed. When only one section or a few sections of a bearer company is present, a modified bearer company is formed. In any extensive engagement the bearer company should be used chiefly to take the wounded to the field ambulances and not to bring the wounded to the dressing station.

* Returning hospital trains are utilised to bring medical personnel and materiel towards the front.

+ The mobilisation and opening of general hospitals is most essential and should be the first steps in all field medical organisation on a large scale, they should be brought into existence before the troops concentrate at the base. In them everything should be as perfect for the care and treatment of the sick and wounded as in any large hospital in India.

‡ Hospital ships are usually arranged as regards accommodation, berths, etc, specially for sick and wounded, but any empty transport vessels returning from the seat of war may have to be improvised for the use of these patients.

The senior medical officer at a staff tour will probably be asked to criticise and sometimes even to correct the written papers submitted by junior medical officers, this requires very precise knowledge. If the senior medical officer has to set tasks, he should be careful in the wording of the problems, so that there can be no misunderstanding them.

It is necessary here to make some remarks in connection with certain of the above subjects.

Position of Dressing Stations—The regulations regarding this are fairly clear—"When an engagement is expected, he (the P M O) will indicate the most suitable position for the dressing stations for bearer companies, and for pitching the field hospitals. In selecting such sites he must invariably consult the O C's as to their suitability from the military point of view" (*F S M, M*, § 80). "Dressing stations will be established under shelter from fire, and as near the fighting line as may be consistent with reasonable safety. Advantage should be taken of a good water supply, and of buildings or other cover near the scene of action. Dressing stations must endeavour, by moving, to keep in touch with the fighting line, as the latter advances or retires" (*F S M, M*, § 104). "The general principle will always be kept in view that the distance between the dressing stations and the firing line should be as small as possible consistent with reasonable safety so as to shorten the journeys of the manual ambulance transport, and to bring the wounded within reach of surgical aid as speedily as possible" (*F S M, M*, § 110).

If the position fixed for the dressing stations of bearer companies is at a distance from the firing line collecting stations will be fixed as the action progresses. If the dressing station is close at hand, or reasonably near the fighting line, the establishment of collecting stations is unnecessary, the wounded are then taken direct to the dressing station from the fighting line. If the dressing stations are at a distance, then the wounded from the fighting line are brought (or find their way) to the collecting station and taken from there by the bearer company men to the dressing station under the care of a medical subordinate.

Medical officers with the authorised equipment remain with the dressing stations (both equipment and personnel being reinforced when necessary). If there is no building or huts available, a tent is pitched. Ambulance tongas (if roads permit) or animal transport and dandies* will rendezvous at dressing stations to carry cases from them to the field ambulances.

In selecting sites for dressing stations of bearer companies divisional P M O's, and brigade S M O's should remember that the infantry fire of the present day may be effective at a distance of 2,000 yards and makes an advance against it at anything closer than 1,000 yards inseparable from severe losses. They have likewise to consider that present day artillery fire may be seriously effective at over 5,000 yards (even at 6,500 yards), and at 4,000 yards an advance in close formation against it is considered impracticable, hence the wide extensions of infantry now adopted, which, amongst other advantages, gives more opportunity for men to take cover.

Duties of the P M O of the force with regard to Evacuating the Sick and Wounded—The P M O of the force must be thoroughly familiar with the military situation, and especially with the conditions affecting the evacuation of the sick and wounded. There are many conditions affecting this evacuation, such as the number of beds available in the field ambulances, extent to which further evacuation is possible whether the line of evacuation is open, interrupted or blocked, or whether an unlimited number may be evacuated. He must know along what

* Dandies and riding animals are alternative to ambulance tongas. The former are only used where wheeled traffic is impracticable.

routes evacuation is to be adopted—by road, rail or river, if by road, length of the journey, whether suitable for ambulance tongas and supply wagons, and the arrangements for the journey, the transport to be used for the sick and wounded—ordinary ambulance tongas, supply wagons, country carts, ponies, mules, camels, dandies, and the exact number of each of these available. No evacuation is, of course, needed for the very slightly wounded or those very dangerously wounded.

The periods of inactivity are to be employed in training medical officers, medical subordinates, and establishment of field ambulances, erecting striking, packing and loading of field ambulance camps, preparing surgical tents for immediate use, arrangements for the reception of full number of wounded, inquiring into arrangements for those that will be left behind, and ascertaining the extent of local resources.

Preparations for fighting that is expected within a definite period include a knowledge of where all the reserve field ambulances are, at what distances in the rear they are, and making arrangements for them to reinforce the field army should this be necessary.

Before an action field ambulances with the force are usually cleared of such sick and wounded as can be removed to the rear with safety, and all arrangements made for the reception of casualties from the field. If a field ambulance, from the number of sick and wounded it contains, want of transport or other reasons, cannot be moved, its place in the division is to be taken temporarily by another field ambulance moved up from the reserve or the line of communications. The ordinary routine throughout a campaign is that all sick and wounded, except trivial cases with the field army, are passed on towards the base as soon as practicable. These proceed with *sick convoys*, in charge of a medical officer or medical subordinate, with a N.C.O. and guard in charge of arms and ammunition, and are handed over at the next camp or billet on the line of communications, the transport, guard, and medical personnel returning to the field army. Further similar convoys on the line of communications convey them to the base or rail head.

The normal position of field ambulances in a camp is in rear of the centre of the force to which it belongs. If buildings are not used, field ambulances are pitched according to the plan laid down in Indian appendix to *Combined Training*. In a forward move when fighting is expected, the normal position of field ambulances is in rear of the ammunition column, but the G.O.C. of the force may consider it necessary to locate them immediately in rear of the fighting troops or at a fixed distance behind the second line of transport.

In selecting sites for field ambulances before an action, care is to be taken that the position is as near the dressing station as the military conditions permit, and that there is a practicable road for ambulances from the front and a sufficient water supply in the vicinity. If the position is not visible, direction flags are put up (F.S.M., M., § 126).

On the eve of an engagement efforts should be concentrated to prepare to receive the wounded and evacuate them as early as practicable. " Endeavours must always be made to evacuate the wounded for the following reasons —

1 In the event of an unfavourable issue the wounded must be saved from capture.

2 In the event of victory the area of operations should at least be cleared of the wounded who can be evacuated, and the medical personnel devoted entirely to the care of those who are still left upon the field, sometimes in great numbers and under very bad conditions.

3 The majority of wounded who can be evacuated during an engagement are men who are fit for transport, seeing that the very seriously wounded are rarely capable of being sent back during the unfavourable conditions of a battle, and, as the wounded come in in com-

paratively small numbers at a time, the medical officers will not be tired out, and will be capable of treating them carefully and getting them fit for transport.

4 Wounded readily disregard the discomfort of transport in view of their desire to get away from an area where they are exposed to the dangers and vicissitudes of battle."

As a general principle all the available medical resources of the field army that may be necessary should be pushed up to the battlefield after a victory, in order to relieve as early as possible the suffering of the wounded who have not as yet been aided.

In a planned battle the locality for keeping field ambulances in readiness should be behind the centre and (when practicable) at a spot where roads meet, from which fairly good communication can be maintained with all parts of the field, and which are easily found. Care is naturally taken to guard against selecting a place too far forward in the direction of the enemy, which, in the event of a retreat, may become an important position, and where no risk of blocking the passage of the troops should be run. The time for assembling the field ambulances at the selected spot is to be calculated so as to avoid too early a start. Our Regulations state that the position of field ambulances (which will as far as may be considered necessary be pitched ready to receive the wounded), will be fixed by the P.M.O. of the force or division under the orders of the G.O.C.

It is well for us to picture to ourselves the exact position of the medical personnel, field ambulances, dressing stations, and the wounded during, immediately after, a few hours after, and the morning following a successful extensive engagement.

The more continued the fighting, the greater the necessity for continued clearing of the hospitals at the front. With an advancing army the field ambulances must also advance, and if those with the force are encumbered with sick and wounded, those in reserve and at the head of the line or lines of communications must take their place. We should remember that the clearing hospital (which will probably be introduced in future campaigns), and the field ambulances at the head of the lines of communication, the lines of communication hospitals under the orders of the P.M.O.'s lines of communication, but the P.M.O. of the force, or of a division may suggest where they can be best placed to assist him.

During an action the P.M.O. of the force handles the field ambulances as divisional, they are not attached to brigades unless such brigades are acting independently. Similarly a divisional P.M.O. works the field ambulances as part of the division, they are not under the orders of brigadiers. The P.M.O. of the force deals with the headquarters of the force, the P.M.O. of a division with the divisional staff.

We have to bear in mind the varying medical arrangements required when—fighting is not anticipated for some time, is shortly expected, and expected at once. These contingencies affect the question of providing accommodation for the wounded and the distribution of our medical resources. In the last named case, for example, all things have to be prepared and at hand ready the moment fighting begins.

The different conditions of defence, attack, defence of detached forces, counter-attacks, or the formation of temporary reserves—each of these affects the distribution of medical ambulances, especially as regards the transport necessary for the evacuation of the wounded and in the selection of collecting and dressing stations.

In a planned or formulated battle we have to consider whether it is a defensive or an attacking engagement, in the former, the distribution of the medical personnel and field ambulances is easy and definite.

* *Strategic and Tactical Employment of the Medical Service*, pp 30, 31. By Lt Col MAXIMILLIAN RITTER VON HOEV, translated by Lt Col W G MACPHERSON, C.M.G., I.A.M.C.

orders may be issued. In encounter battles no such definite arrangements can be made as regards time and place of distribution of medical personnel and equipment, which have to depend on the time and place at which the opposing forces advance, and upon the plan of operations which the commanders of the opposing forces settle upon.

Outdoor Work.—Medical officers as part of their outdoor work on a staff tour may be asked to report on the facilities which exist in the neighbouring town or villages for establishing hospitals in them, what supplies there are, what additional medical assistance (if any) can be obtained, to report on a given site for establishing a field ambulance under canvas, and if not suitable to select another and give reasons for the selection made, report on the condition of the road or roads for wheeled ambulance transport, select sites for dressing stations for a mixed infantry brigade in action at a particular place, report on camping grounds and bivouacs for a brigade or a division, the water supply in close proximity, etc., etc.

The P.M.O. of a division may be required to go over a certain area of country to plan out the medical arrangements in the event of an action being fought there. These different outdoor tasks may have nothing to do with the main scheme of the staff tour.

"Sketches, tables, diagrams and graphics should be furnished in connection with tasks when by so doing the work will gain in clearness and conciseness."

It is always necessary to be fully acquainted with the local resources of the localities in and near the theatre of operations—buildings for hospitals, medical and surgical equipment available, food for the sick, transport, etc.

In reporting on the resources of a town in India as to its capacity to receive the sick and wounded, etc., the following points deserve attention. The three chief places to acquire knowledge of the town are—the municipal office, the *kutcheri* and the main thana or police station. In addition we should go over the whole town. Ascertain if there are any hospitals and dispensaries, if so, where they are located, how many cases they can take in—these hospitals could not, of course, be empty at the time. The cases left in them by us would be treated by the hospital staff, being controlled by us. Find out the existence or not of any other buildings, institutions, churches, etc., that would be able to take in a certain number of cases, but would need some medical personnel, hospital establishment and equipment. We should examine any existing hotels, boarding houses and *sewars*, that would have beds, bedding and ordinary utensils and some servants, but would require complete medical and nursing staff and equipment. Examine the town hall, markets, schools, etc., which might be able to shelter casualties, but have limited sanitary provisions.

We should also ascertain the number of medical men and medical subordinates and chemists' shops in the place, and how far these could be drawn upon, the numbers of vehicles, horses, ponies that could be obtained as ambulance transport, the amount of coolie labour that could be obtained to supplement the A.B.C. men. Find out also the number of furniture makers, makers of charpoys, iron mongers, etc., with a view to purchasing bedsteads and various metal cooking utensils from them in an emergency, also the local resources for providing temporary latrine, kitchen, and similar accommodation should be noted.

The amount of food and comforts for the sick and wounded should be inquired into—milk, fowl, eggs, sheep, oxen, vegetables, etc., this is, of course, the work of the S and T Corps, but it may fall to a medical officer to carry it out.

The railway station, if there is one, should be visited to see what facilities it offers for entraining patients, and also to see if a next station could be established in or near it.

Lastly, a plan of the place should be obtained, and all the places mentioned marked on it, or if unable to get a plan, one should make a rough sketch of the town and places named.

Writing Orders.—One of the most important and difficult parts of a staff tour is that of writing orders. To do this correctly requires considerable practice and much thought. In this connection it is well to previously study F.S.R., Part I, *Operations*, 1909, Chap. II, pp. 18-29, *King's Regulations* on the same subject, and F.S.M., M., pp. 26-28.

The orders a P.M.O. of the force writes are draft orders for insertion in head quarters operation orders, and orders to P.M.O.'s of divisions and independent brigades. The orders a P.M.O. of a division writes are draft orders for insertion in divisional operation orders and orders to O.C.'s field ambulances, and, if necessary, to M.O.'s of corps units.

The operation orders should only contain the information on medical matters that everybody requires to know. For example, with regard to an ensuing action, a draft order such as the following may be necessary—
"No. British Field Ambulance, No. Indian Field Ambulance will receive casualties from Brigade . Division" etc. "They will occupy the following position. No. British Field Ambulance at No. Indian Field Ambulance at "(naming a village, copse, bridge, milestone, etc.) Or—Dressing stations for Division (Brigade, etc.), will be established at No. British Field Ambulance and No. Indian Field Ambulance will provide the bearer companies for these Dressing Stations." All men of the named division or brigades then know where to go. Other orders may be—"No. British Field Ambulance, less bearers of one section, and No. Indian Field Ambulance, will march with the centre column." "The bearers of one section each of No. British Field Ambulance and No. Indian Field Ambulance will march with the advance guard. No. British Field Ambulance and No. Indian Field Ambulance will remain with the reserve at ."

No orders to O.C.'s of field ambulances are issued in divisional operation orders, such orders, and those to M.O.'s of battalions are contained in the detail orders of divisional P.M.O.'s.

In the issue of orders when places are mentioned the map in use will be referred to at the top of the order, e.g., "Reference X" map." Orders must be written legibly, clearly, and concisely, they are to be dated and the exact time issued stated, and at the bottom is to be enumerated the different officers to whom copies have been sent (if to more than one). Orders should be signed, numbered, and re-read, to make sure that they are clear.

The orders issued to O.C.'s field ambulances should repeat the divisional orders as regards the details of troops and the position of all the field ambulances with their ambulance transport, also orders regarding the opening of field ambulances and the establishment of collecting and dressing stations, with the method of evacuation to the rear of casualties, so far as the P.M.O. division can give such orders at the time.

In the writing of orders in a staff tour we are only given the same time as we would actually have on field service. "To form the habit of devoting many hours to the elaboration of long and detailed orders is prejudicial to the performance of good staff work in the field."

All orders issued in connection with the medical arrangements require the approval of the G.O.C. of the force, division or brigade as the case may be. The requirements of the G.O.C. in other directions will sometimes conflict with what may appear to be the best way of handling the medical units in the various situations that may arise. To avoid such incidents it is well for the P.M.O. to consult the G.O.C. concerned or his staff on all matters of importance. For example, in connection with an extensive or important

engagement about to take place, it is recommended that the P.M.O. of the force should have "a plan of the medical arrangements prepared as concisely as possible in accordance with his own opinion as to the best method of keeping his resources in readiness. Such a representation of the medical plan of operations is of much value to the G.O.C. of the force and to the chief of the staff, both of whom are directly interested in knowing that the best possible arrangements for the wounded are being made when a battle is imminent. The scheme will then form the basis of any final decision that is arrived at with regard to the medical tactical requirements, so far as they are consistent with military considerations."

Each medical officer present at the tour should keep a diary and enter in it everything that takes place concerning his special work, every order he has given, and every arrangement he would have made had the tour been a reality. He should also keep a complete file of the scheme, narratives, indoor and outdoor tasks set and carried out, reports submitted, plans, diagrams and maps prepared, so as to be able from the diary and file to submit a complete report of the staff tour at its conclusion, if called upon to do so.

Junior medical officers on a staff tour should possess some knowledge of the work carried out by the P.M.O. of a force or division, and of the various other staffs of the field army—G.O.C.'s head quarters staff, A.G.'s and Q.M.G.'s staff, S and T staff, &c. Such a knowledge would enable them to know to whom to refer when difficult questions crop up on field service and on large manoeuvres, thereby economising work, lessening correspondence and ensuring prompt attention to the matter in hand.

Books required—The following books are indispensable—

Training and Manoeuvre Regulations, 1909, pp. 12 to 26. These give a full account of the objects, course, and method of conducting a staff tour and should be studied carefully before participating in one.

Field Service Regulations, Part I, *Organisation*, 1909, Chap. II, pp. 18–34, all orders and reports are to be written in accordance with the instructions given in these pages. In Chap. I, p. 14, will be found a range table for rifle and gun fire which is to be considered when selecting places for collecting and dressing stations, and in considering the movements of ambulance tongas.

Field Service Regulations, Part II, *Organisation and Administration*, 1909, pp. 97–109, are most important, they deal with practically all questions connected with the medical service in the field—general organisation, field ambulances, medical establishments, general system of dealing with casualties in action, stationary, clearing, and general hospitals, ambulance trains, hospital ships, field medical store depots, etc. These subjects have to be carefully studied. Chapter II, pp. 22–26, dealing with the general principles of war, organisation and functions of the forces in the field, Chap. III, pp. 27–45, dealing with the general functions of the executive and of the component parts of the forces in the field, and Chap. VI, pp. 57–71, on supplies, should be read.

Field Service Manual, Medical, is very important from cover to cover and must be closely studied, it has to be used as a *vade mecum* and need not therefore be further considered here.

Field Service Regulations, India, Chap. IV, pp. 13–15, deal with various medical matters connected with field service. Other parts of this volume, such as those dealing with mobilisation, stores and equipment, supply and transport (clothing, rations, ambulance transport, etc.), should be read.

War Establishments enables us to at once see the composition of any force and to ascertain its strength.

with the normal proportions of the different arms, and the apportionment of the field ambulances at our disposal. Another useful book is the Staff College (Quetta)—

Provisional Memoranda, 1911, which, though unofficial, is almost indispensable to medical officers on staff tours, as it contains practically every table of equipment and personnel he may want.

Field Service Pocket Book should be read carefully and the parts connected with the medical services in the field marked.

Manual of Map Reading and Field Sketching is a very useful book to help us to understand the maps we have to study and to draw sketches of places and plans.

Army Book No. 153 (pocket note book) with carbon paper is used for writing memoranda, orders, etc., besides which we require a portfolio, sketching materials, paper clips, and pins with small coloured flags.

Also a military compass and binocular field glass.

The medical aspects of the subject of staff tours is by no means exhausted in the foregoing remarks, what has been stated is specially intended to impress military medical officers, with the scope and objects in view, how much may be learnt from them, and the extent to which they broaden our views and quicken our intelligence in dealing with the requirements of large masses of men in the field. They teach us how to arrive at a correct decision with judgment promptly, they point to the needs of the moment and show the fallacy of obscurity arising from too elaborate detail. They specially direct our thoughts and opinions so that with any change of military operations a corresponding change of medical tactics will be adopted forthwith. Staff tours are most important from an educational standpoint to carry them out continuously and successfully necessitates medical officers being thoroughly familiar with all Regulations dealing with the medical service in the field. They bring out the fact that medical tactics, or the strategical and tactical employment of the medical service in the field, is a comprehensive subject and one which should be mastered by us. Personally one feels that there should be a more definite means of instruction in the organisation and machinery employed by the medical department in the field than exists at present. A want of knowledge of the elements or general principles of military operations in the field is the only obstacle to the application of medical tactics.

Staff tours test our knowledge and the facility we possess of applying that knowledge, from them we learn our deficiencies and the way they may be remedied. They are specially useful to senior officers of the R.A.M.C. and I.M.S. who may have to act as S.M.O.'s of brigades, or P.M.O.'s of divisions or of a force, just as *regimental tours* are specially useful to junior medical officers who may be in medical charge of corps, units or sections of field ambulances. Staff tours help to teach senior officers how to apply knowledge of administrative work in the field as distinguished from executive work, and how to maintain troops in a state of health, fitness and efficiency.

The medical aspects of staff tours have their interest for combatant officers likewise. Some military officers are quite conversant in a general way with the mechanism of our medical organisation during warfare, but the majority have only a very superficial knowledge of the medical work on field service, and it is desirable that senior medical officers taking part in staff tours should endeavour to impart all information they can and be ready to explain any part of our organisation when called upon to do so. Were all combatant officers acquainted with the medical tactics of war, they would frequently be in a position to give greater assistance to us in carrying out our duties than is now the case. On the other hand, during staff tours we have many facilities for acquiring some knowledge of the work of other departments of the army in the field. We are thrown into intimate relation with various officers engaged in different branches of staff work, and almost mechani-

* *Strategical and Tactical Employment of the Medical Service*, p. 41.

cially acquire some general knowledge of their specific functions during warfare.

By means of staff tours we get some idea of the difficulty of following fighting troops, a matter of much importance to administrative medical officers who must know the position of all fighting units to enable them to make proper distributions of the field ambulances under their control. Hence the necessity in a large engagement of having a map of the area with numbered, named, or coloured flags attached to pins to mark the position of the troops on the map and of the medical units as each day's fighting progresses.

On the last day of the tour all the officers meet the director in chief, or director at the final conference during which the events of the tour are discussed and criticised. It should be remembered that all the medical arrangements of field service are known to staff officers, so that a general knowledge of our work in the field is not enough, we must know our work thoroughly.

It is not to be assumed that a staff tour is a pleasure trip, it is usually very hard and close work, both in the camp and out. Throughout the tour we are being shown our deficiencies, or our weak points are being pointed out, or want of knowledge criticised, and our sound work eulogised, yet throughout we are undergoing a form of education that is most profitable to military medical officers.

In the preparation of this paper I have been specially indebted to the different volumes of the Regulations connected with training and field service, to various articles on staff tours in the *Journal of the Royal Army Medical Corps* that have been published during the last few years, to *Strategic and Tactical Employment of the Medical Service* by Lt. Col. MAXIMILLIAN, Ritter von HORN, translated by Lt. Col. W. G. MACINTOSH, C.M.G., R.A.M.C., and to *A Study in Troop Leading and Management of the Sanitary Service in War*, by Majors JOHN F. MORRISON and EDWARD L. MUNSON, U.S.A.

ON THE BIOLOGY OF BLACK MYCETOMA *

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IN the classical paper on streptothrichosis contributed by Musgrave Clegg and Polk† in the *Philippine Journal of Science*, which can be classed as the most exhaustive paper on the subject that has appeared within recent times the writers describe mycetoma as follows —

' A disease consisting of a streptothrix infection of the foot (*streptothrix pedis, actinomyces pedis*), characterised by a chronic course, swelling and deformity of the part a peculiar oily degeneration of the tissue with cavity and fistulous opening of mycotic aggregations, containing the micro-organisms. Black mycetoma is then not a mycetoma if we accept the above definition, for it is a hypomycetes as will be seen later on, and in fact the writers have not, on account of this reason dealt with this disease at all in their paper. But the name mycetoma was first coined by ‡ Vandyke Carter in 1860 for applying it to this very disease, which he described first in 1860 and which name he afterwards ex-

tended to the pale variety of mycetoma which he found a year later. In accordance with the rules of nomenclature prevalent among scientific men precedence is to be given to the name given by the first discoverer. So there is no justification for withholding the application of the name mycetoma to the disease under consideration. The definition given by * Brumpt in his exhaustive treatise on the mycetoma in the *Archives de Parasitologie* is more appropriate. It runs as follows —

" Des mycoses inflammatoires produsant des grumes formes exclusivement par un feutrage exterior mycetan et devant être climbes à l'exterior par des fistules plus ou moins developpes."

The determination of the nature of the fungus which are found rather abundantly in this disease presented a good deal of difficulty and up to now it has not been settled in the same definite way as that of the white mycetoma, this is because of the unaccountable difficulty experienced by the workers in isolating and cultivating the fungus in a pure state. In fact according to Brumpt no worker, old or recent has been able to cultivate it. I quote below the writings of this author which appeared in his article on "Les mycetomes". The writing being in French I give below the English version of it —

" No author ancient or recent has been able to cultivate the typical black mycetoma such as I am going to describe. Wright in a little atypical case which he observed succeeded in cultivating a branching fungus white in colour, which produced the black sclerota in dead or old cultures. He does not give any other botanical details, possibly he has to do with a contaminating fungus as has been the case with other authors who had tried to cultivate it. After detailed study we have been confirmed in this opinion. It will not be possible to give here in detail the full literature on the subject. Suffice it to say, that beginning from 1760 up to 1909 a host of workers like Gilbert Vandyke Carter Cunningham and Lewis, Wright, Brumpt, Bouffard and Laycock made contributions on the subject. Of these a few require to be dealt with in detail. Vandyke Carter was the first to recognise the fungus nature of the organism which he believed to be the cause of the disease, but he suggested that the organism was a stage of the white mycetoma and not a different fungus ‡ Cunningham was the first to recognise that the fungus is a septal branching one belonging to a higher order than the white mycetoma or actinomyces but he clung tenaciously to the old view put forward by him and Lewis that the fungus is an accidental contamination and not the cause of the disease ‡

* Read at a meeting of the Asiatic Society.

† *Philippine Journal of Science*, Vol. II, No. 6, page 477.

‡ *Transactions of the Medical and Physical Society of Bombay*, 1860, Vols. I and VII.

* *Archives de Parasitologie*, Tome X, 1905.

† *Scientific Memoirs*, 1895.

‡ *Journal of Experimental Medicine*, 1898.

Wright was the first to claim to have cultivated a fungus from a black mycetoma case, but, as can be seen from the quotation above and from other considerations, the fungus was a contamination. The fungus separated by Wright having already died out, is not available for purpose of comparison, but from a published description it appears that this differs in many respects from the one separated by me.* Brumpt describes two varieties of black mycetoma, the one studied by Bouffaid which he describes as *Aspergillus Bouffaidi*, and the other, which he designates as *Madurella mycetoma*, corresponds to the Indian variety. The material used for cultivation of my fungus which, I believe, is the fungus of black mycetoma, was taken from a case



BLACK MYCETOMA

Agar culture—Four days' growth from the original black grains from the affected part

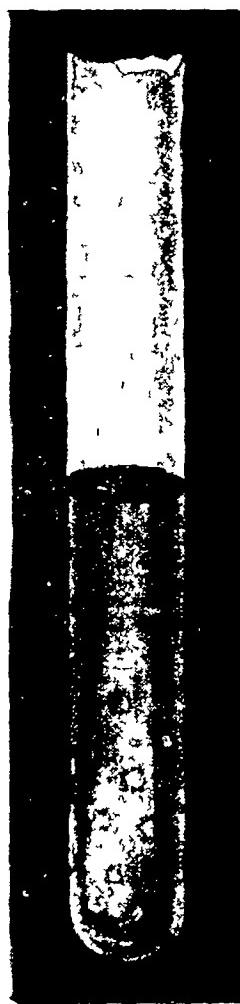
of black mycetoma admitted in the Medical College Hospital. A piece of a tissue was removed from a globular swelling of about the size of an orange situated in the plantar surface of the leg. On making a section through the piece, numerous small black grains of about the size of a pin's head were found situated in small cavities in the tissue. These were loosely attached and could be easily removed. A large number of these grains were removed under sterile precautions in various culture-media, some were kept for examination and the rest of the tissue kept for section

EXAMINATION OF THE GRAINS

Some of these grains were crushed between two slides and smears were made and were examined under microscope, both stained and unstained. Smears showed numerous branching blackish threads with septa. They are very coarse. Stained film showed the same black threads which do not take any stain, no spores were found.

CULTIVATION

Some of these grains were placed under strict aseptic precautions in ordinary agar and also in glucose-agar tubes. Next day, the surfaces of the cultures were found uncontaminated with any organism. The grains appeared as if increased



BLACK MYCETOMA

A bouillon culture showing the radiating growth sticking to glass wall

in size. By the fourth day, there was no doubt about the increase in size of the grains. They have become 7 to 8 times their former size and are surrounded by fine hair-like structure. Smears examined from the surface of culture showed delicate branching mycelial threads which take stain very easily and show nucleus like structure inside the threads. This appearance is quite

unlike the thick black threads found in the grains. But instead of a smear, if a portion of the growth be removed and smear made and examined after staining the thick black (Sclerotia) threads are seen from which are seen sprouting out thin branching threads which take stain like those described above.

Cultivations in different cultures, potato, bouillon, milk, Sabouraud's culture-medium besides sugar solutions were tried. In potato the growth is dry and black, not a drop of moisture was found. In bouillon, a peculiar appearance is seen. If a piece of old black growth from agar be placed in the bouillon and then the tube thoroughly shaken, and then it is incubated, numerous small white colonies will be found with radiating rays, and all of them sticking to the glass wall. No diffuse growth is seen nor any scum found on the surface. Animal experiment gave negative results.

A CASE OF MADURA FOOT

BY K. W. MACKENZIE, M.B.,

CAPT., I.M.S.,

30th Punjab, Jhansi

THE disease occurred in a native driver who was admitted into hospital on 12th May 1911, with a history of an injury to his great toe, dating from January of this year.

He was not admitted into hospital at that time and noticed nothing for three months, when the toe began to swell. This continued until finally it incapacitated him for work, and he came to hospital.

On examination, the toe was twice its normal size, blue in colour and covered with soft bullæ. On these being pricked, viscous grumous fluid appeared, which contained numerous minute black grains. The swelling was present on both surfaces of the toe and extended as far back as the metacarpophalangeal joint. On probing, the growth was found to be entirely superficial, and no deep sinuses could be discovered, leading down to the bone and in view of this, only a superficial operation was undertaken.

An area of affected skin was excised from the dorsum and an incision made into the plantar surface, and the flaps thoroughly sharp-spooned. No signs were found of any extension into the deeper tissues.

A second operation had to be undertaken at the end of a month, as there was a recurrence of superficial bullæ, all containing the characteristic minute black grains. These were easily removed with a sharp spoon, and localised colonies were swabbed out with carbolic acid. The toe had now

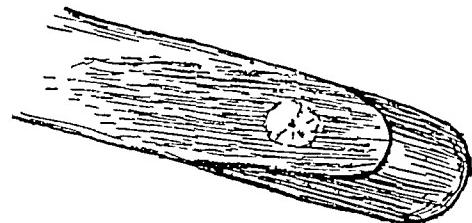
returned to its normal size, and the man was discharged after two months in hospital.

As the clinical features seemed exceptional, in the superficial nature of the lesion, sections of the excised portion of skin were cut, with such means as we had at our disposal, and some of the black grains were planted out on potato and on agar.

On potato, after 24 hours a white fluff was seen growing from the surface of the granule. This increased in size and after three days extended to the surrounding surface, but quickly died off as the potato dried.

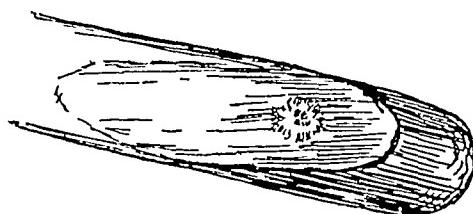
On agar the growth was slow, but in a week a definite colony was formed with the granule for a centre. The colony was circular, at first white and semi-translucent, and showed marked variations from the centre (Fig. I a.)

SEVEN DAYS' GROWTH ON AGAR



(Fig. I a.)

A second tube which was further advanced showed on the surface a greyish yellow efflorescence, suggesting spore filaments. In this growth the concentric arrangement was even more marked than in the former, there being a growth on the central granule, surrounded by a clear zone, and outside that a ring of the efflorescence (Fig. I b.)



(Fig. I b.)

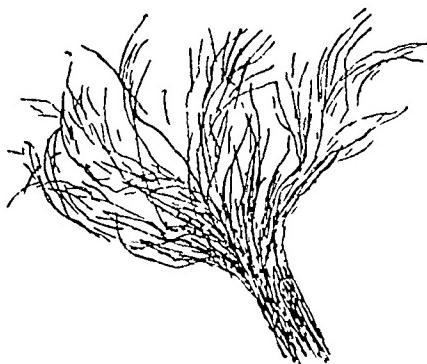
The colonies seemed to grow best at room temperature, which, however, was pretty high in the hot season in Jhansi. After a week's growth, pigment began to appear, the colour of the colony changing from a greyish yellow to a deep mahogany.

Under the microscope a definite mycelial structure was observed.

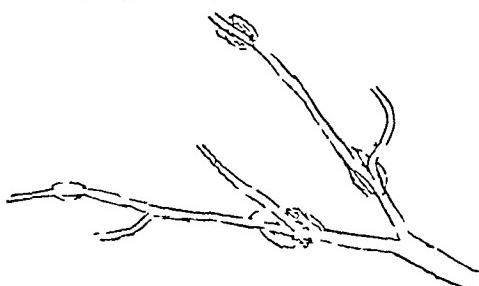
Under low power the appearance was that of a thick trunk with minute dots of pigment in longitudinal lines, breaking up distally into innumerable branches, which branched in their

twin into a mass of fan-like filaments, which contained no pigment (Fig II a)

MYCELIUM FROM AGAR GROWTH

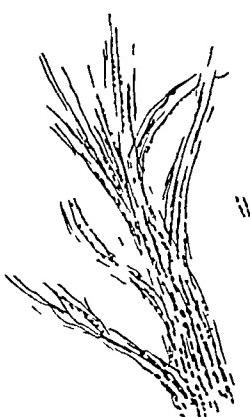
(Fig II a) $\times 105$

Under a higher power the hair-like terminations of the growth were seen to be clear hyphae not septate but branching freely with definite enlargements at the points when branches left the stem (Fig II b)



(Fig II b)

Nearer to the central trunk, the hyphae were found to contain pigment. This was in the form of minute brownish yellow granules deposited apparently in the walls of the hyphae, and becoming more numerous, and deeper in colour, as they joined the central stem, when the pigment still retained its longitudinal arrangement (Fig II c)

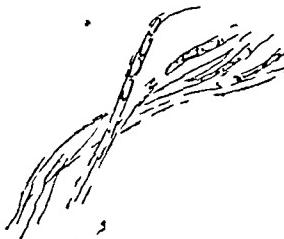
 $\times 600$

(Fig II c)

At a later stage of development, after ten days' growth, a yellowish fur, or efflorescence, was

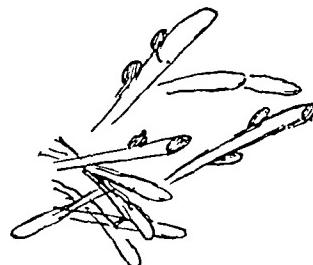
found to have appeared on the surface of the colony

When the growth was now examined under the microscope, the terminal hyphae showed signs of division, clear oval spaces being shut off, which may have represented the formation of endospores (Fig II d)



(Fig II d)

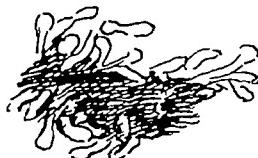
In some of the densest parts of the growth, club-shaped terminal filaments were found, from some of which round pigmented buds seemed to grow laterally and terminally, which appeared to be exo-spores. These club-shaped filaments were found on the margins of the growth, but could not be traced to their origin owing to the dense pigment deposited around them. The filaments themselves were clear (Fig II e)



(Fig II e)

Gains taken from the toe and mounted in Canada balsam showed in one case the remains of short spore filaments, appearing at the margin of the sclerotium (Fig III a), and in another the spores *in situ* apparently very short-stemmed, and growing all over the surface of the sclerotium, the spores being relatively very large (Fig III b)

SCLEROTIUM MOUNTED IN CANADA BALSAM $\times 600$



(Fig III a)

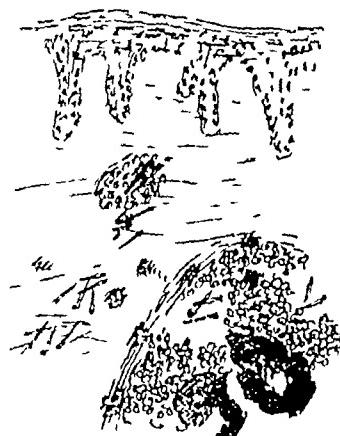


(Fig III b)

In the tissues, of which rather tough paraffin sections were obtained, very definite appearances were found.

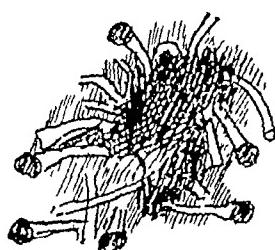
In the deeper subcutaneous tissue were seen numerous minute dark masses of pigment, and here and there a larger colony, surrounded generally by a dense collection of leucocytes. Scattered through these small abscesses, and in the surrounding structures, were seen many short tapering rods with a round deeply pigmented body at the broader end, very like a safety match in appearance. These were apparently spore filaments bearing chlamydospores. In the tissues, these spore filaments were found attached to the smaller colonies, or lying free, and in many parts the spores were seen free from the rods, and in some cases showed signs of commencing budding (Fig. IV a.)

PARAFFIN SECTION OF SKIN AND A GROWING COLONY $\times 105$



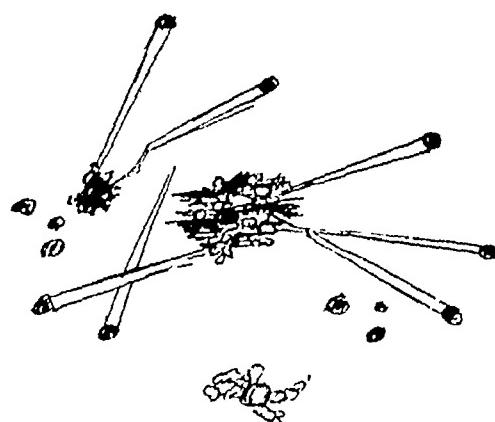
(Fig. IV a.)

In another section, very many yellow branching bodies were seen in the deeper parts, which under a higher power of the microscope seemed to consist of a central round body, probably a spore which, by a process of budding, had thrown out arms in different directions. An examination of all the younger and smaller growing colonies showed that the growth in the tissues was by budding, which was irregular in character, forming no mycelium, but a dense mass, around which pigment was very early laid down. Quite a small colony appeared able to produce the match-like spore-filaments. (Fig. IV b.)



MARGIN OF SCLEROLUM

(Fig. IV b.) $\times 600$



young colonies

(Fig. IV b.)

It would thus appear that this parasite, from the clinical side, produces a superficial affection of the skin and subcutaneous tissue, with little tendency to spread deeper.

In growth, the appearances differ according as it grows in the tissues or in culture-media, while in the tissues the parasite produces no mycelium, and in growth resembles the *Saccharomyces* group of the order Ascomycetes, of which Castellani and Chalmers state, that "while these fungi live a parasitic life no asci are found, and reproduction takes place by germination and lomidia." The spores, however, in this case appear rather to be chlamydospores. On the other hand, in culture the appearances are those of a higher order, the Hyphomycetes, though with the references at my disposal I am unable to reconcile these appearances with those of any of the described varieties of the parasite of Madura foot.

A SALVAR SAN SERIES

BY R. KNOWLES,

CAPT., I.M.S.,

Civil Surgeon, Jhansi

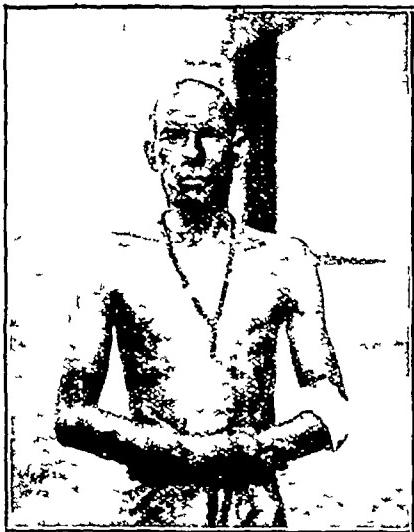
SOME apology is needed for adding even such a short series as the following to the already over-abundant literature on this subject but perhaps the importance of this new method of treatment may justify it.

All cases were injected intravenously, as it is obvious that hypodermic or intramuscular injections do not fulfil Ehrlich's canon that the maximum safe dose may reach all parts of the body as quickly as possible.

In the first two cases a hollow needle was used; we now use an apparatus consisting of glass graduated funnel, rubber tube with glass window, silver intravenous cannula with bulbous extremity and two clips the vein being exposed through a $1\frac{1}{2}$ inch incision. In the early cases 0.4 gramme only was given, two capsules supplying three

patients In the later cases 0.6 gramme as sold in a capsule was given and we believe that a still larger dose such as 0.8 gramme would be both safe and of more utility

Case I—"Incha"—Hindoo male, 40 years, admitted 13th February 1911 Gummatous



ulcer on the left shin, severe joint pains, and smaller ulcers on the right leg Given 0.3 gramme intravenously on 22nd March 1911 after five weeks' unsuccessful treatment by the mouth Patient stated that three quarters of the pain had disappeared in 48 hours in 48 hours also the gummata became clean

He was discharged in apparently sound health with only scars left on 7th April 1911

Case II—"Ragnath"—Hindoo male, 40 years, admitted 24th January 1911 with pains in knees, great debility, and secondary eruption on buttocks, thighs and legs, posterior surfaces of both arms and the back 0.3 gramme given intravenously on 22nd March 1911 The lesions cleared up completely and he was discharged apparently well on 7th April 1911 He returned, however, to hospital with some conjunctivitis in May and has since developed keratitis, with corneal ulcer Both eyes are affected and it may, perhaps, be syphilitic keratitis the dose having been insufficient One tube was divided between cases I and II

Case III—"Bari Lal"—Hindoo male, 26 years, admitted 28th March 1911, with unopened and painful gummata on the right foot and left legs gummatous sinus on dorsum of the left foot syphilitic nocturnal headaches of a severe character and severe night pains in the shins Given 0.4 gramme intravenously on 30th March 1911.

The night pains in the legs ceased after 24 hours the headaches cleared up almost completely in two days and were entirely absent after the fourth day the sinus was dry and healing in 48

hours and the patient was discharged apparently well on 6th April 1911

Case IV—"Pannu"—Mussalman, 30 years, admitted 5th April 1911, with secondary eruptions from head to foot—papular chiefly, also pustular sore-throat severe headaches and sleeplessness at nights, and nocturnal fever 0.4 gramme was given intravenously on 6th April 1911 The same night he slept quite soundly for the first time for nearly two months The skin eruptions were dessicating next day All skin lesions had disappeared by the 12th April 1911 He had an attack of dysentery later and left hospital without any sign of active syphilis about him on the 28th April 1911

Case V—"Sabrani"—Hindoo female, 25 years, admitted 6th April 1911, with sleeplessness, fever, sore-throat and sloughing gummatous perforation of the hard palate Given 0.4 gramme intravenously on 6th April 1911 The throat became completely clean in four days and the perforation shewed clean, healthy, granulating edges The loss of substance could have been restored, perhaps, from plastic flaps, but operation was refused Patient left hospital "cured" on 19th April 1911 No gargle or oral applications whatever were given the oral lesions were entirely cured by the intravenous salvarsan

Case VI—"Rani beti"—Hindoo female, 25 years, admitted on 6th April 1911, with very acutely painful pharyngitis, deep ulcer on the right tonsil, and intanasal gumma with crusts and pus inside the right nostril and swelling of the nose She was unable to swallow and crying



with pain 0.4 gramme was given intravenously on 6th April 1911 On the 7th she could swallow, on the 9th the nasal condition was clean and healing and she was discharged "cured" on the 22nd In this case nasal syringing with permanganate lotion and local applications of menthol vaseline were used

Case VII—"Mahesh Das"—Hindoo male, 25 years, admitted on 2nd May 1911, with syphilitic perostitis of both tibiae, ulcei and gummatus necrosis of the Rt tibia, severe pain due to subcutaneous gummata in the right thigh, left shoulder and left wrist, and sleeplessness. 0.6 gramme given intravenously on 31st May 1911. By the 7th he was entirely free from pain and the ulcer on the right shin was clean and healing. Discharged "cured" on 10th May 1911.

Case VIII—"Jaganath Singh"—Hindoo male admitted on 30th March 1911, with persistent right-sided clonic facial hemispasm and a history of possible venereal disease. He had been treated for two months as an out-patient without success. With the possibility in view of cerebral syphilis as a cause he was given 0.4 gramme intravenously on 30th March 1911. No change in his condition occurred, however, and the facial spasm was therefore probably not due to pressure of some intracranial gumma on the facial nerve, as had been thought possible. He had suffered from the condition for 18 months and left the hospital unhealed on 13th April 1911.

Case IX—"Lachoo"—Hindoo male 22 years admitted on 5th May 1911, with a history of recent syphilis with secondary eruptions and suffering on admission from severe pains continuously in many joints—a condition very frequently associated with syphilis in India. Given 0.6 gramme intravenously on 8th May 1911. On the 9th the pains had almost completely disappeared the patient stating that only about one-eighth was left in four joints, whereas originally it had been acute in nearly every joint of the body. He was discharged, relieved, with only slight residual pain in one ankle on 24th June 1911. Liniments and massage, with Scott's dressings on both knees and ankle joints, were also utilised.

Case X—"H. W."—Eurasian 17 years of age was admitted on 19th May 1911, with acute sloughing gummatus ulcers on the hard palate (almost deep enough for perforation) uvula, posterior wall of the pharynx, and inside of the left nostril. Given 0.6 gramme intravenously on the same day. All lesions cleaned up and healed, with the exception of slight nasal discharge, within two weeks. He had spent the previous six months mostly in bed,—and when last seen was quite fit and able to proceed to Delhi for employment.

Case XI—"D."—Parsee male, 20 years of age, was admitted on 20th May 1911, with primary hard chancre on the corona glandis. 0.6 gramme was given intravenously (R.C.) on the same day. He was kept under observation for about ten days after seven days the primary sore had become a healed scar.

Case XII—"Radhay Lall"—Hindoo male, 24 years, was admitted on 10th May 1911, covered from head to foot with maculae rupial crusts, sepirogenous sores, and a multitude of secondary skin lesions. It was difficult indeed to find a spot at the bend of the left elbow free enough from sores to allow access to the median basilic vein. 0.6 gramme was given intravenously on the 20th. Two days later every skin lesion shewed evidence of drying up. Ten days after injection he was still covered from head to foot but now with clean raised shiny scars, which subsequently looked ketoid in character. The photograph shews the more prominent ones at this stage. He was discharged "cured" on 25th June 1911. Photograph No I.

Case XIII—"Guru Paishad"—Police Constable 34 years, was admitted on 2nd June 1911, with a history of syphilis 3 years previously, joint pains, pains in the tibiae and deafness, especially of the right ear. No local cause could be found to account for the deafness which was very marked, and it was thought to be possibly of syphilitic origin. He was given 0.6 gramme intravenously on 9th June 1911. The pains cleared up completely in a few days and the deafness from being about $\frac{1}{8}$ th of normal hearing diminished until the patient could hear about $\frac{1}{4}$ ths as well as a normal person. He left hospital relieved on 18th June 1911.

Case XIV—P. Constable Badi—25 years was admitted on 16th June 1911, with papular syphilitic eruption all over the body and sore throat. 0.6 gramme was given intravenously (R.C.) on 16th June 1911. The eruption was desquamating very freely on the 20th, and had disappeared except for resultant pigmentation on the 22nd. The sore throat also cleared up at once, and he was discharged "cured" on 26th June 1911.

Case XV—"Soa Lal"—Hindoo male, 22 years, was admitted on 19th June 1911, with a history of syphilis 2 years previously, partially treated at the hands of a *Vaid* by mercury, and suffering from persistent pharyngitis, gummatus ulcers in the mouth on the tongue, on the inner surface of each cheek, and funicular lesions on the buttocks. He was given 0.6 gramme intravenously (R.C.) on the same day and all lesions, including the boils were quite healed on the 25th. He had no other treatment of any sort.

Case XVI—"Jumman Khan"—Mussalman, 40 years, was admitted on 20th June 1911. Covered with syphilis from head to foot. He had enormous rupial crusts all over the face, lips, anterior nares, chin and face with sepirogenous crusts over the nape of the neck and vertex of the head, large sloughing dirty sore on the glans and body of the penis, ulceration

of the scrotum, and a large variety of skin lesions and crusts all over the body. See photograph II, taken on the morning of the 21st. He received 0.6 grammes intravenously on 20th June 1911.

On the 23rd, every lesion shewed marked signs of clearing up and healing, most of the crusts, except those around the mouth, having fallen off and left behind clean scars with pigmentation. He was discharged with only a very few lesions still shewing on 8th July 1911. See photograph III, taken on date 7th July 1911.

Remarks—Time, alone, will test the value of the present high reputation of Salvarsan. It, however, affords perhaps the most striking instance in all therapy of the possibilities of treatment by drugs and of intravenous medicinal injections.

The sequelæ to the injection deserve mention. We have injected all classes of patients,—both plethoric and very emaciated, without any harmful results. In most cases immediately at the end of the injection or a little before the patient complains of nausea, and vomits freely immediately afterwards. Can this be possibly due to liberation of arsenic into the stomach, or is it merely a nervous reflex? Fever, about 100 to 102°, and sometimes chill and rigor occur from 2 to 10 hours after injection. In most cases from 12 to 18 hours after injection the temperature is normal and the patient quite comfortable. In case XI, however, the fever occurred on the day after and not on the day of injection. In case XV, the patient had troublesome vomiting for about 60 hours after injection, which could not be checked by any of the usual measures, but which stopped of its own accord later.

A SIMPLE AND EFFECTUAL MEANS OF ADMINISTERING SALVARSAN

BY G. FOWLER,

CAPTAIN, I.M.S.,

Civil Surgeon, Alofa

FINDING the procedure that is recommended a very tedious and troublesome one, I tried the mixture of Salvarsan with Olive oil, and was surprised at the results. The local pain is practically nil, and the patients improved rapidly under the treatment, the same as is recorded by the injection of Salvarsan in Saline solution. The procedure I adopted is as follows—A Roux's syringe with a short needle of fairly large bore is sterilised by boiling in water—an ounce of pure Olive oil is boiled in a small aluminium basin and the oil is allowed to cool, or if one is in a hurry, the basin is put into some cold water.

Two cc of oil is drawn up in the syringe with the needle on—the piston is drawn well up

to the top and the oil is shaken up, so that the oil adheres to the sides of the glass barrel. The piston is then completely drawn out, a finger being placed on the point of the needle (which is lowermost), so that the oil may not run out—next the Salvarsan is thrown into the barrel and 4 cc of oil is poured on the Salvarsan direct from the aluminium basin. The piston is then replaced, and as soon as the washer engages the barrel, the syringe is turned up, so that the needle is uppermost. The screw cap which is on the piston rod is then pushed up and screwed home, and the syringe is violently agitated.

The Salvarsan mixes with the oil and forms a uniform emulsion. This is injected intramuscularly into the gluteal region.

The points that should be noted are:—

(1) The piston of the syringe should not be of metal. The syringes supplied for Salvarsan injections by Chemists are unsuitable for this purpose as the acid Salvarsan attacks the metal and the piston jams.

(2) The needle must be of wide bore.

(3) Care should be taken when the piston is being replaced, the glass barrel being held firmly in its metallic casing with the left hand. I would advise persons wishing to try this method to practise it with some simple oil.

(4) There should be no hurry in the mixing, as the whole of the Salvarsan will mix up with the oil. I have had no caking of the Salvarsan in the syringe.

The elaborate method recommended for the use of this wonderful remedy makes it impossible for the average medical man to administer the drug, but the method I suggest is one that can be tackled by any average medical man. I have injected 8 cases recently by this method and have had excellent results.

A CASE OF ACUTE DELIRIOUS MALARIA

BY A. COCHRANE, F.R.C.S.,

Superintendent, Central Asylum, Agta.

ASYLUM attendant Ramdin, age 22, went off duty with fever at midday, the 17th July 1911. I saw him at 9 A.M. on the 18th, when he was delirious with a rectal temperature of 107°F., Pulse 110, weak and of poor tension, respirations rapid and shallow. Physical examination of organs disclosed nothing abnormal. I gave 10 grains of Bihydrochloride of quinine, dissolved in 25 minims of water, into the median basilic vein, the effect was to depress the pulse markedly—a smear preparation of blood was taken and stained by Giemsa's stain, the sub-tertian parasite was found in fair numbers. Ice applications and rectal enemas failed to reduce the temperature, except momentarily, but were continued till 5 P.M. At this time the pulse was so feeble

that I feared to give a second injection of quinine, ice applications were stopped and creosote $\frac{1}{2}$ drachm, mixed with one drachm olive oil, was rubbed into the axilla.

By 6 P.M., the temperature had fallen to 100°F without any further depression of the pulse, later it fell to 99°F and the patient became rational. The pulse, however, failed to improve in spite of three injections of camphor in ether. The patient gradually sank and died at 5 A.M. on the 19th, without any further rise of temperature.

No *post-mortem* was obtained.

This case of delirious malaria is, I think, worth reporting, not only on account of its acuteness but because it raises the question of the method of quinine administration. There was distinct depression of the pulse noticeable for at least one hour subsequent to the injection. In future I would most certainly give quinine in one or two pints of warm saline solution—the depressing effect would, I think, be obviated and the adherent infected corpuscles blocking the minute cranial capillaries be, very possibly, washed along into the larger vessels and come into contact with the circulating quinine.

The action of the creosote in reducing the temperature, after eight hours' continuous trial by ice, is noteworthy, as far as could be ascertained, the creosote produced no depressing effect, and it has not done so in other diseases, e.g., pneumonia, in which I have tried it. However, in discussing this case with a medical colleague he told me he had ceased to use creosote as a means of reducing the temperature as he had had several fatal cases following its use. The opinion of others on these points would be interesting and valuable.

A Mirror of Hospital Practice

A RADICAL CURE OF HYDROCELE *

BY A GWYNNER, M.R.C.S. (Edin.),

MAJOR, I.M.S.,

Officer Civil Surgeon, Howrah

I AM bringing before you to-day for discussion the radical cure of hydrocele by the introduction, after tapping, of sterilised catgut.

In two of the districts of Behar where I have lately been stationed there is a large number of patients suffering from hydrocele who are in the habit of going every three months to the nearest dispensary and having the hydroceles emptied.

A very large proportion of these, either from fear of the knife or of chloroform, or both, will not

subject themselves to the radical cure by excision or emersion.

It is in cases such as these that I have performed the operation which is the subject of our discussion. The *operation* itself is very simple, the only instruments required being a trocar and canula, a pair of scissors, a pair of dissecting forceps 12 to 14 inches of sterile catgut, and a probe like the one I now pass round, which has been filed down and has been provided with a fish tail at one end.

The parts are prepared in the same way as they would be for the open operation.

Immediately before the operation a sterilised towel is so arranged as to cover the parts, exposing only the site of the introduction of the trocar.

The fluid is evacuated in the usual way and when the sac is empty, the catgut varying in length from 10 to 14 inches is taken up with the dissecting forceps and one end introduced into the canula. The rest of the catgut is pushed into the sac by fixing the catgut against the side of the canula with the V of the fish tail and so pushing it on.

Finally, the trocar is pushed back into the canula, carefully tilting the canula up at the time to prevent any injury to either the testicle or cord.

The trocar and canula are then both withdrawn and the wound dressed with Collodion.

It is essential for the success of the operation that the catgut should be sterile. I have it sterilised immediately before the operation, using Jellett's Alcohol steriliser.

I can only guess at what takes place within the sac. I have never had occasion to open one after the introduction of the catgut. I imagine that there is an exudation of lymph, an aseptic inflammatory exudation which eventually organises.

What is evident clinically is that within the next 24 hours the sac filled up partially forming a painless doughy tumour in which the catgut may be felt if it is rolled between the fingers.

This gradually hardens till within the next ten or twelve days we get a hard painless tumour $\frac{1}{2}$ or $\frac{1}{4}$ the size of the original hydrocele.

This in the course of time gradually contracts till it is scarcely perceptible after 6 months.

Two questions now arise—

(1) Are there any risks in the operation?

(2) Is it suited to all classes of hydrocele and is the result a radical cure?

(1) The only risks I can think of are injury to the testes and the risks of suppuration. Both these can be avoided with care.

(2) Is it suited to all classes of hydroceles?

I am inclined to think from an experience of more than eighty operations I have performed within the last five years that it is not.

This method is more successful in the recent small or medium-sized thin-walled hydrocele.

* Paper read at the August Meeting of the Medical Section of the Asiatic Society of Bengal.

It is the old large-sized hydrocele with the thickened sac that tends to recur.

In these—and only a few have come under my observation—it appears to me that some part of the old sac has been obliterated, that the operation has been partially successful, that perhaps a second or third operation of the same kind might result in complete obliteration of the sac.

I am sorry that I have not had any opportunities of verifying this.

Finally we come to the question as to whether this is the operation of selection—as to whether we would prefer this method to the open methods—either emasculation or excision.

Considering the simplicity of the operation, the rapidity with which it can be performed, its safety under strict antiseptic precautions—the absence of the necessity for chloroform or other anaesthetic, the shortness of the subsequent stay in hospital I think we may claim that it is the operation of selection in the class of hydroceles I have above referred to, the recent small or medium thin-walled variety.

For the older large varieties with thickened sac I would prefer the open method but where the patient objects to this operation, either from fear of the knife or chloroform, I think we should be justified in tapping and inserting catgut, repeating the operation if necessary, in those cases which refill.

A CASE OF GASTRO ENTEROSTOMY COMPLICATED BY REGURGITANT VOMITING

BY A MARTIN LEAKE, M.C., F.R.C.S.,

Bengal Nagpur Railway

THE following case is of interest on account of the complication and the good effect brought about by an Entero-anastomosis.

A short outline of the history is as follows—

Patient, Hindu male, age 27, work electric fitter, used to suffer from pains in the upper part of the abdomen 6 or 7 years ago. Present illness started four years ago with attacks of acid belching and vomiting coming on after food. About fourteen months ago had an attack of vomiting and brought up dark-coloured stuff, this attack continued about six hours. Condition has varied a great deal, and sometimes patient would be almost free from trouble for four or five months at a time. During the past six months the condition has been much worse. Vomiting comes on some hours after meals and is generally very profuse, there is no great regularity about it and sometimes it does not occur for several days. Pain has not been a prominent symptom. No history of melaena, patient used to be quite stout and has lost a lot of flesh during the last few months.

Present state—Patient is thin but not wasted to any great extent, looks ill, tongue is furred, bowels have a tendency to become constipated. There is some tenderness and resistance on right side of abdomen above level of umbilicus. No definite mass can be felt.

Peristaltic waves are seen passing from left to right across epigastric region and are very marked after pressure has been made in this region and after patient has taken food. After giving Potassium Bicarbonate and Citric Acid the outline of the great curvature of the stomach can be seen about a finger's breadth below the umbilicus. The stomach splash can be felt.

Treatment—Patient was treated by careful dieting and washing out the stomach. There was considerable improvement whilst this treatment was kept up, but directly any attempt was made to give ordinary food and to stop the lavage, the trouble returned. The treatment was continued for about a month, and as at the end of that time it seemed that no permanent good would result from it, an operation was advised. Patient decided to have the operation, and on March 31st the abdomen was opened. A mass was found in the neighbourhood of the pylorus which felt hard and was bound down to the surrounding parts. Some enlarged lymphatic glands were felt. The stomach was dilated.

Posterior gastro-enterostomy was performed and care was taken to make a very free opening between the stomach and bowel. Patient had a bad night and next morning was complaining of great discomfort and gripping pains. The stomach tube was passed and a large quantity of bile-stained fluid was drawn off. Vomiting started during the day and a large quantity of bile-stained fluid was brought up at each attack. Washing out the stomach made the patient somewhat more comfortable for the time, but the vomiting continued most persistently. Patient was kept in the sitting position and rectal feeding was carried out. On the fourth day as the vomiting showed no signs of stopping and the patient was getting very exhausted, another operation was advised. There was some delay in obtaining permission to perform a second operation, but directly this was given, the abdomen was opened again and the parts carefully examined. When the stomach and attached bowel were lifted up, nothing abnormal could be seen to account for the trouble, there was no kink evident at the union, or in the afferent loop. It was, however, noticed that the afferent loop had been made longer than it should have been. The afferent and efferent loops were anastomosed as far from the stomach as could be done comfortably without any strain on the bowel.

Patient was very bad for the next twelve hours and was given intravenous injection of saline and later on saline by the rectum. It soon became

evident that the gastric condition was very much improved and by the morning of the second day all inclination to vomit had passed off. Washing out the stomach was continued, and for a short time after the operation the washings were chocolate coloured and had a bad smell, this did not last long, and by the second day the washings came away clear and odourless. Mouth-feeding was commenced on the third day and caused no trouble, on this day an enema brought away some coloured faecal matter, colour in the faeces had been absent since soon after the first operation. Progress was uninterrupted with the exception of a small collection of pus which formed in the superficial parts of the wound and caused a little fever for a few days. Patient left the hospital on April 19th, he was then taking ordinary food and putting on weight rapidly.

The cause of regurgitant vomiting after the operation of gastro-enterostomy has been the subject of much discussion and many different operations. It used to be considered to be due to the stomach being intolerant of bile, but this has been shown not to be so. Moynihan the great authority on this branch of surgery, attributes it to a loop of intestine being left between the duodeno-jejunal flexure and the anastomosis. The loop becomes water-logged and a kink is formed at the junction of the bowel with the stomach. I think this will entirely explain the present case. The part of the bowel attached to the stomach was about six inches from the duodeno-jejunal junction, and consequently a fan-sized loop was formed. This loop would not be apparent when the stomach and bowel were raised out of the abdomen, and any kinking which might have taken place would be undone. That it was due to some mechanical cause is obvious from the way the vomiting came on very soon after the original operation and ceased almost immediately after the entero-anastomosis.

The patient has been seen quite recently and looks robust and well, he complains of a little uneasiness sometimes in the upper part of the abdomen. As he has improved so much since the operation it is hoped that the trouble may be inflammatory and not malignant disease.

A CASE OF PERFORATING WOUND OF THE HEART

By R. KELSALL, M.B., B.S.,

CAPTAIN, I.M.S.,

Civil Surgeon, Thayetmyo

MAUNG THAN DINE, a Burman, age 31, was brought to hospital about mid-day on 13th March 1911, with a stab wound of the abdomen and one in the chest. Both wounds were about 1 inch in length. The abdominal wound was below and to the left of the umbilicus, and the

thoracic wound was in the ninth interspace on the left side—just in front of the posterior axillary line. The wounds had been inflicted at 7 P.M. the previous evening and the patient had been carried about 20 miles from his village to the hospital. He had signs of acute peritonitis, and the pulse was between 130 and 140. At 1 P.M. the abdomen was opened. It was found that there were seven perforating wounds of the small intestine. The abdominal cavity contained a large amount of semi-digested food, and presented the appearances usual in acute peritonitis from intestinal perforation.

The intestinal wounds which were all situated in the jejunum were closed, and the abdominal cavity cleaned as far as possible, by swabs and by hot saline.

Digital exploration of the thoracic wound failed to reveal any injury to the lung.

The patient died at 9 P.M. the same day. On post-mortem examination the following injuries were found in addition to those described. Two perforating wounds of the diaphragm, each about $\frac{3}{4}$ inch in length half an inch apart. One of these wounds led into the pericardium—perforating wound of the left ventricle, the external wound being $\frac{3}{4}$ inch and the internal wound $\frac{1}{4}$ inch in length. The wound was oblique and by its valve-like arrangement probably to a considerable extent prevented escape of blood from the ventricle. The pericardium contained about four ounces of clotted blood. The stabbing instrument (a sharp pointed *dah*) had, therefore taken the following course. From the 9th costal interspace, it had, without injuring the lung, penetrated through the diaphragm into the abdominal cavity. From there it had (without injuring the stomach) again pierced the diaphragm, penetrated into the pericardium, and into the left ventricle.

The stomach contained about one pound of semi-digested rice. The case is interesting from a medico-legal point of view, in that although the patient had a perforating wound of the left ventricle, and seven penetrating wounds of the jejunum, and was carried 20 miles over a rough road and subjected to a severe operation, he lived 26 hours.

A CASE OF HEMIPLEGIA WITH LESION IN THE CRUS CEREBRI *

Reported By GURANDITTA KAPUR,

*House Physician and Assistant to the Professor
of Medicine, Medical College, Lahore*

L S, a Hindu agriculturist, about 40 years of age, resident of a village in the Amritsar District,

* Published with the kind permission of Major D. W. Sutherland, M.B., I.M.S., Principal, Medical College, Lahore.

was sent to the Mayo Hospital, Lahore, on 7th March 1911, by Lieutenant-Colonel II Smith, I.M.S., Civil Surgeon Amritsar, and treated in the Medical wards under Major D. W. Sutherland, I.M.S. On admission he complained of inability to open his left eye and weakness of right side of face, right arm and right leg. The duration of the trouble was six months.

The family history had nothing important in it, and as regards his personal history he used

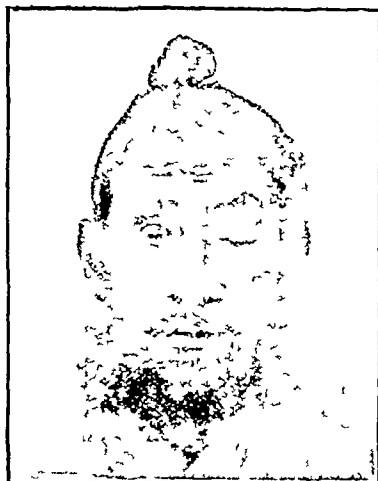


FIG. 1

alcohol in moderation and denied having ever had syphilis during his life.

The history of his present trouble ran as follows—About six months before admission he had an attack of fever associated with pain in big joints, headache and dull aching sensation all over the body. Fever was pretty high, but there was no loss of consciousness. During the attack he noticed one morning that he could not open his left eye. The attack of fever lasted for about a week and he was all right except some general weakness, but his eye trouble persisted and he could open his eye but to a very slight extent. Ten days later he got a similar attack again with pain in the joints, etc., which lasted for five or six days, and left the eye in a worse condition still, there being left very little movement of the left upper eye-lid and that only on strong efforts to open the eyes. After the second attack he noticed weakness in the right arm and the right leg, and felt some difficulty in bringing his right foot forward while walking. He had more febrile attacks after that and each of these lasted for a few days. Whether these attacks had anything to do with his present complaint cannot be definitely said, but most probably they were malacial in nature and had no connection with the trouble which he came in for. Finding that the domestic remedies could do him no good, his friends advised him to undergo an operation in the Amritsar Civil Hospital, by Lieutenant-Colonel II Smith the Civil Surgeon there, and the latter seeing that

the case was not a surgical one, sent him over here for treatment, and demonstration to the students.

Condition on admission—A well-developed fair muscular man with complete ptosis in the left eye, the palpebral fissure being altogether absent. When asked to open both his eyes, the left eye remained shut and no movement was noticed in the upper-lid, the forehead wrinkled a little more distinctly on the right half than the left. There was well-marked external squint in the left eye with dilatation of the pupil which was quite inactive to light and accommodation. Distant vision normal in both eyes, but near objects looked blurred with the left eye alone. There was no diplopia. Ophthalmoscopic examination did not reveal any abnormality in the fundus.

His tongue went out to the right when protruded. There was not much difference on the two sides of the face, but his right arm and right leg were decidedly weaker than those on the left side, and there was a little tendency to drag his right foot when made to walk. The dynamometer indicated comparative weakness on the right side, the readings being as follows—

Right hand	53°	Right leg	43°
Left hand	65°	Left leg	55°

There were no sensory phenomena subjective or objective, on either side. The elbow, wrist knee

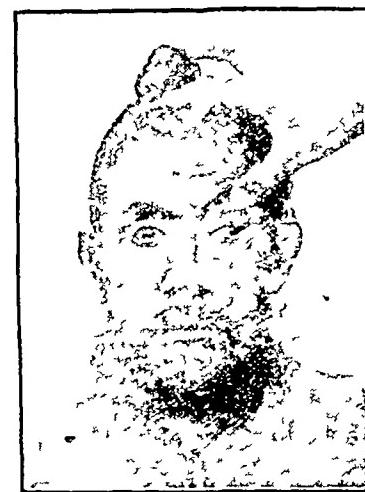


FIG. 2

and ankle jerks were distinctly exaggerated and sometimes ankle-clonies could be elicited on that side. There was extensor Babinski on the right and flexor on the left side.

Liver was normal in size, spleen enlarged and just palpable below the costal margins. Heart and lungs did not show anything special, and bowel and kidney functions were normal.

Blood-examination showed slight leucocytosis with the differential count as under:

Polymorphonuclears	68.8 per cent
Lymphocytes	21.9 "
Large mononuclears	7.2 "
Eosinophiles	2.1 "

The arterial blood pressure was rather low being 115 mm of Hg in the right brachial artery

The case was evidently one of right-sided hemiplegia with lesion in the left crus-cerebelli

There was no history of syphilis or any evidence of that disease, still it was thought worth while to try the effects of anti-syphilitic remedies. After a preliminary dose of a mercurial pill at night and a saline draught next morning, he was put on mercury and iodide of potash in the form of a mixture. His temperature kept normal or a little below it except on the 4th day of admission when he had a mild attack of fever which, however, yielded to quinine. Later on mercury was omitted from the mixture and administered by enunction. On 12th of March his left eye was found swollen and the lids oedematous, but the eye ball underneath was unaffected and healthy. Fomentations with warm boric lotion for a couple of days relieved him of the swelling and pain, and it was on the 14th of March, i.e. just a week after admission that he was found for the first time just to move his left upper eye-lid. Ever since then, there has been a gradual improvement in the patient's condition, but he left the hospital on 30th March on the plea of private affairs after a stay of only 24 days, and the treatment could not be carried on any further. On the date of his leaving the hospital the condition of the patient was as follows — Ptosis and squint were much less than before, the left pupil which was widely dilated was now only a little more than that on the right and it responded (though somewhat sluggishly) both to light and accommodation, the right arm and right leg regained power, and, on the whole, the patient gained 4 lbs in weight.

The photographs were taken by me a few days after admission. In one the patient is trying his utmost to open both his eyes, and in the other, the upper lid is raised showing marked external strabismus and to a little extent dilatation of the pupil in the left eye.

A CASE OF STRANGULATED INGUINAL HERNIA

By AGHORE NATH GHOSE,

Asst Surgeon, Monghyr

This case is specially interesting as it showed the great recuperative power of the intestine.

Knat Panjara Hindu male, aged about fifty-five was admitted in the Monghyr Hospital at

about 8 P.M. on the 11th December 1910. The history was that the bowels used to descend into the scrotum for the last five years and each time a little manipulation would set everything right, but on this occasion the bowels came down at 2 P.M. but did not return and the patient grew very restless and depressed. He vomited several times. There was absolute constipation and intense pain in the abdomen.

After admission in the hospital he vomited twice. The vomiting was bilious, not steatorrhoeous.

I tried laxatives but to no purpose. Lieutenant-Colonel J. G. Jordan, the Civil Surgeon, very kindly allowed me to do this operation. The operation was done at 10 P.M.

The incision extended from the point corresponding to the middle of Poupart's ligament to the lower third of the scrotum over the longitudinal axis of the hernial swelling. The incision was deepened till the white fibrous surface of the external oblique aponeurosis, the first ramiating point, was exposed. This aponeurosis was divided up to the external angle of the cutaneous wound with scissors on a grooved director which was slipped beneath the outer pillar of the external abdominal ring. The outer layers of the sac were also divided on a grooved director, then a fold of the sac was picked up and opened parallel to the surface of the sac and the opening was enlarged with the finger as the guide. A large mass of omentum and about 14 to 16 inches of small intestine were found.

As the constricting band was very tight it was only possible for me to nick the lower edge of the band with scissors the pulp of the left index finger acting as the guide, in this way sufficient relaxation was obtained and the complete division of the band facilitated. The gut was found deeply indented at the seat of the stricture. Nearly the whole of the protruded gut was lustreless, black and emitting a putrid odour and the colon reaction was also absent.

The whole of the protruded omentum was resected after the stump was tied with interlocking ligatures. No radical cure was attempted but the gut was reduced, and the external wound was partly approximated by silkworm gut sutures.

No opium was given. The patient passed a little mucus and blood twice on the night of operation and thrice on the day following. The temperature ranging from 100° to 101° F. On the third day after operation he passed flatus and on the fifth day he passed a copious stool without any stimulation of the bowel either by purgative or enema. The patient made an uneventful recovery.

Indian Medical Gazette

OCTOBER

THE THERMAL SPRINGS OF INDIA

In the Hyde Memorial Lecture delivered by Dr R Fortescue Fox, and published in the *Proceedings of the Royal Society of Medicine* (Vol IV, No 8, June 1911), entitled "Outlines of Medical Hydrology," there is a vague allusion to "the most valuable group of medicinal springs in the world" in India, and the writer especially refers to such a group in the Hazaribagh district.

The lecturer had surveyed all parts of the world and was not specially interested in India, but as the subject is a little known one, it may be well to here give an outline of what is known about the hot springs of India.

Two pamphlets supply a vast amount of information in this subject, viz., one by Dr T Oldham, F.R.S., in the *Memoirs of the Geological Survey of India* (Vol XIX, Pt 2, 1882), and another on the Hot Springs of South Bihar, by Lieut-Colonel L A Waddell, C.B., C.I.E., I.M.S. (retd.), in the *Journal of the Asiatic Society of Bengal* (Vol LIX, Pt 2, 1890)*

Dr Oldham's list comprises no less than 301 hot springs in all parts of India.

He states that in a majority of cases these remarkable outbursts of water often charged with gases and emitting strong smells, have been endowed by the superstitious and ignorant with wondrous virtues, many are widely known, but many are situated in out-of-the way distant wild places and are little known.

Dr Oldham divided his long list into geographical areas, and gave the latitude and longitude of each and the usual temperature of the water.

He gives a list of 23 such springs in the land known as the Konkan, or the narrow belt between the Western Ghats and the sea, e.g., that at Rajpur, temperature 105° F., Rajwari, temperature 110°, two springs, temperature said to be "very hot, almost boiling," Uneri (or Oonhere) near Jaffrabad, Vijaibhai, 48 miles north of Bombay, several springs, temperature given as 136°, but varies, another spring Anaval, at foot of hills south-east of Surat, is said to

have been produced by an arrow shot by Rama, a great fair is held here at the full moon in the month of *Chaitra*, when the temperature is said to be miraculously lowered to allow people to bathe in it! Lower Sindh is the next area which contains many springs, e.g., Mangapur, temperature 127° F., three springs, Lakhi, temperature 105° F. near Sehwan on the road to Hyderabad (Sind), three springs, Gazipur, a few miles west of Shah Hassan, water pale green and sulphuretted.

To the North in the Indus Valley we find many others among which we may mention that at Lakha, a sulphureous spring, situated near Jannatai, Uch, in a valley in Beluchistan, Bindai Pin near Sodi or Shori Pass, opposite Kala, near the boundary of the Dera Ghazi Khan District, the water is clear and very hot. Near the Peshawar cantonments one or two springs of tepid water are mentioned. Dr Oldham refers to six springs on the "Afghan boundaries," and there are many in the Punjab, e.g., Turanwai, between Abbottabad and Mansurah, Teva, 10 miles from Dhaimala (water saline, alkaline), Bhasia, below the ridge on which Chamba fort is situated, the water of which is strongly saline and slightly aperient, called by Dr Macpherson *Lahand khad*, and Soni on the Sutlej, which consists of eight or ten springs on the right bank of the Sutlej.

In Kashmir Oldham mentions among others those at Taked or Theed near Srinagar, and the well-known springs at Islamabad. Dr Oldham details many others which we cannot find space to mention. In the North-West Himalayah at an elevation of 5,587 (Lat 32° 2', Long 77° 25'), are the springs of *Manikaran*, they are very hot and the springs vary from 160° to 202°.

In Sikkim are several hot springs, one on the west bank of the River Mechi, another one day's march from the Pemlong monastery, another a day's march east from Rinchingpong, one at Yeomtong on the Lichung River (at 11,920 ft) described by Hooker, another at 16,000 ft at the foot of Kinchinjow (Hooker).

At Singuwa (Lat 23° 41', Long 83° 42') there are remarkable hot springs which rise over a large area. They were described by V Ball and locally known as "*Tatta-pani*".

In Hazaribagh District Oldham describes a collection of springs at *Katsamsandi* (Lat 24° 7', Long 85° 16'), 1,750 ft, temperature 110° F., the springs come up in a stream as big as a

* In 1851 Dr J Macpherson, in the *Indian Annals of Medical Science* (No 3, Calcutta, 1851), gave a full list of mineral springs.

man's finger! They contain carbonic acid, sulphur, silica and iron (Princeps). This place is 17 miles from Hazaribagh close to the old road to Calcutta. The springs rise over a space 50 yards in length. These are probably the "valuable springs" referred to by Dr Fox at the commencement of this article, but indeed there are several others in this district, e.g., *India Turba*, 12 miles from Hazaribagh to the south, warm, sulphureous, and *Belkapi*, elevation 1,219 ft., temperature 190°. Here are four springs and the temperature is different in each. Sulphuretted hydrogen is thrown out, and muriate and sulphate of soda is deposited. The water is nearly tasteless and used by cattle (H. H. Wilson). They are locally known as *Suryakund*. Hooker refers to them as near the Grand Trunk Road in a small valley. Other springs in a neighbouring area are Kesodeh,

There are many references to hot springs in Burma, but little is actually known of them.

The hot springs of South Behar belong, says Lt.-Colonel Waddell, to two series, those (1 to 8) along the south flank of the hills of the Santhal Parganas and those (9 to 15) in S. Monghyr. Waddell's table gives all details as to position. The most important Santhal spring is that called *Lanlandah* near the village of Sibpur in the Mahespur Thana. The temperature is 122°. Waddell roughly calculates the outflow at 26 gallons per minute, there is a profuse discharge of gas, with a slightly sulphuretted odour, the water has a slightly saline taste with a neutral reaction, the spring is perennial.

The following analysis was made by the late Surgeon-Major Warden, the Chemical Examiner to Government of Bengal —

	Solids	Chlorine	Free Am	Alb amm	N	HARDNESS			Nitrates	Nitrates	On ignition	Sulphites	Iron
						Total	Temp	Perm					
Lanlandah	32	5.3	0.08	0.04	0.34	1		1	trace	"nil"	No blackening	pres	?
Burmasia	36	1.6	0.2	0.048	0.29	21	12.5	8.5	"	"	"	"	?
Sitakund	19	2.4	0.024	0.04	1.2	9	5.5	3.5	,	"	trace	trace	trace
Bhaduriaabhi	13	0.5	0.032	0.03	0.6	7	5.0	2.0	present	present	No blackening	pres	nil

two and a half miles south of Bhirkatta village, Sheopur on north bank of Damudai River, near the Jharia coalfields (These are in Manbhum District). There is also a sulphureous spring near the hill of Pachet, west of the confluence of the Damudai and Burakui Rivers. In Birbhum District, 12 miles west of Suri, is a spring much frequented by natives called Tantipara.

The best known springs in Behar are those near Monghyr, called *Sitakund*, a copious stream flows, the temperature is 140° and the water is very pure, and Messrs Kellner & Co make much soda-water out of these fine springs. There are other springs in the eastern face of the Kuriakpur Hills in Monghyr District. In Orissa there are many springs, e.g., at Oteri 10 miles west of Khurda, Taplapani near Loagudi, hot and sulphureous. The "Sitakund" springs close by Chittagong are well known and much visited by pilgrims. There are many springs here, hot and cold, brackish, sulphureous and chalybeate.

These springs are no doubt of value as baths and are held in much repute by natives of the localities for the cure of itch, ulcers and other skin affections. In most cases, however, the priests have so arranged that an essential part of the process of cure consists in the preliminary worship which must be paid, and paid for at the neighbouring shrine.

As already quoted, Dr Fortescue Fox refers to the hot springs of India in the following language — "We have in India one of the most valuable, extensive and varied, if not the most valuable group of medicinal springs in the world, many of them situated in fine climatic stations. I will only mention the Hazaribagh District where the country for more than 100 miles in all directions is teeming with thermal springs at an elevation of about 1,500 ft."

This we fear is somewhat optimistic language. It is true that there are some groups of hot springs in the Hazaribagh District, an area of

7,021 square miles, with a population of a little over a million people

If we wished to describe the "hot spring area" of Bengal, we would rather put it as Monghyr and the Sonthal Pergunas and neighbouring Districts or part of districts. In Monghyr district we have mentioned several springs. The chief ones are the group among the Kharagpur (Kuiackpore) Hills, e.g., Bhaduria, Bhui, close by village of Darayapur in Jamalpur thana, the Tatalpam or hot waters near Bhimbash, 12 miles S W of Kharagpur and 4 miles north of Guddih. These, the finest in the district, issue from a low hill close to the Man River, there are several springs with an area of a few hundred yards. Capt S R Sherwill has described them (*J A S B*, Vol XXI, 1852). They are at an elevation of only 314 ft above sea-level. The temperature is from 146 to 150° F. This place has been identified by General Cunningham as that one mentioned by the Chinese traveller, Huen Tsiang, in seventh century A D., but Colonel Widdell does not agree with this view.

Another is at Malnipahar, a hill 7 miles north-east of Bhimbash.

The best known springs in this district are, however, at Sitakund, as already mentioned. The hot spring is enclosed in a masonry reservoir, the temperature is about 137° F., and the water is beautifully clear and limpid. There are several other good hot springs in the neighbourhood. Mr O'Malley (*Gazetteer, Monghyr*) has collected a lot of references to this well-known and much-frequented spring. In 1794 Twining mentioned that it was much used by persons going on long sea voyages, who provided themselves with many bottles of it. Bishop Heber said many in Calcutta drank no other water. Sir J Hooker describes it, and Mrs Fanny Parkes referred to it in an interesting way in her *Wanderings of a Pilgrim* in 1836.

In the Bubhum District is the village of Bakleswar, 12 miles S W of Suri town, there is a large group of temples and springs, hot ones, cold ones, and sulphureous ones, all unite to form a stream. These are much frequented by bairi women. Sherwill, in 1850, found the temperature to be 162° F. in one spring, and 128° in the coolest. The hottest spring discharged along 120 cub. ft of water per minute.

Bakleswar is a popular place of pilgrimage and the legends of the place are given in full by O'Malley, quoting from a report by Mr F. H.

Skeene, ICS (ret'd), a former Collector. The enterprising Pandas assert the efficacy of these springs for bronchitis, phthisis, diabetes, and all forms of skin disease.

Dr Fortescue Fox at the end of his valuable lectures refers to "the surprising fact that up to the present time there has been no scientific report made on the mineral waters of India." This may be true, though scarcely surprising. These places are all either neglected and known only in their immediate neighbourhood, or they are places of pilgrimage, exploited by the local priests, who are totally ignorant of medicine and are more concerned with the springs as a means of collecting together the pilgrims for the preliminary religious rites and subscriptions than with them as a means of treating disease. The climate even of the best groups of springs is hot and torrid and never will attract Europeans who are ill, who will prefer to seek the relief that waters and baths can give in climates more congenial than these remote and "jungly" places where the vast majority of the hot springs of India are situated.

Current Topics

ACTION OF THE TROPICAL SUN

DR HANS ARON has an article in the *Philippine Journal of Science* which, if a bit disappointing, is nevertheless of considerable interest (*Ph. J. of Sci.*, Vol VI, No 2, April 1911).

We quote *in extenso* Dr Aron's own summary of his article —

1 Under climatic conditions, even during the cooler seasons of the year in Manila, animals, such as rabbits and monkeys, which by nature have only a limited power of physical heat regulation or animals the physical heat regulation of which is artificially inhibited (tracheotomised dogs) die if exposed to the sun, the body temperature rising to febrile heights. If the same animals are protected from the rays of the sun, or if the increase of heat due to radiation from the sun is compensated by an increased loss such as would be brought about by a strong wind, then the animals suffer no discomfort. Insolation of the skull alone is without effect if the body temperature is kept within normal limits.

2 The *post mortem* findings on the animals dying as a result of insolation show decided haemorrhagic lesions of the meninges in the brain, and in monkeys in the heart.

3 In animals without sweat glands the subcutaneous tissues are heated by the radiated heat from the sun to temperatures above those compatible with life.

4 The human skin, if exposed to the sun is warmed to 3° to 4° above the normal skin temperature (32° 5 to 33° 5°C.). An increase, even to the normal body temperature, is prevented by evaporation of sweat. The cooling effect of the sweat secretion causes a fall of the skin temperature even if insolation is continued during longer periods.

5 The brown skin of Malays, while theoretically absorbing more heat in the sun, shows a smaller rise in temperature in the tropical sun than the skin of white men under similar conditions. As an explanation, it is believed that in earlier and better water evaporation by sweat secretion takes place.

6 The air in the human body, especially in black man, under the influence of the tropical sun acquires temperatures far above those compatible with life.

7 It is demonstrated that in the tropical sun a man with a coloured skin is in a better position as regards heat regulation than is a man with a white skin.

8 Types of apparatus suitable for testing temperatures that are electrically described.

In concluding I wish to invite attention to more general biologic questions as regards climate. The monkey, whose home is in the Tropics, withstands the sun less readily than any other animal I have observed, including even the white man. Of course, the monkey does not live in the fields, his home is in the forest, into which only a small proportion of the direct rays of the sun enter. He instinctively avoids exposing himself to the sun for more than a few minutes. The same is true of the native of the Tropics, if he is left to his own customs. Even if he is otherwise nearly naked, he often wears a large hat like arrangement which shades not only his head but his body.

Certain features of my climate must always be met. The temperate climate is only suitable for man if he protects his body against it. But chemical heat regulation would not be sufficient to allow us to withstand the cold of temperate climates without the protection of clothes and houses.

The question of the best way to live in a certain climate will always be to learn how to avoid its injurious effects or to secure protection against them. No better example than the monkey which is killed by the tropical sun in from one to two hours can be found to confirm the above statement.

Hæmoglobinuric FEVER IN THE CANAL ZONE*

THIS is the subject of an elaborate and complete pamphlet by Drs Deeks and James. It forms a most complete review of the history, aetiology, and literature of this fascinating disease or complication. We can only quote the conclusions arrived at by the writers—

The history of hæmoglobinuric fever proves that the symptomatology of the disease was recognised and recorded prior to the time when the malady was distinguished either as an entity or as a symptom complex of malaria. There is no proof that blackwater fever has spread from one country to another, as have kala azar, yellow fever and sleeping sickness. On the contrary, the disease invariably manifests itself when certain conditions relative to the epidemiology of malaria and to that of no other disease are present.

These conditions are—

1. The presence of a population non-immune against malaria.

2. The prevalence of malaria in such quantity as to produce an almost continuous infection in this population.

3. A large proportion of tertio autumnal malaria, because the amount of blackwater fever is in direct proportion to the intensity of this variety.

4. The neglect of prompt and continued administration of quinine, especially in primary attacks to persons non-immune against malaria.

In every locality without exception, where these conditions obtain, hæmoglobinuric fever is found.

The conditions may vary from time to time in the same or in different localities, with a corresponding increase or decrease in the amount of hæmoglobinuric fever. They are present in restricted areas and absent from those contiguous. When any condition varies, hæmoglobinuric fever varies in proportion. In this respect the malady differs from every infectious disease other than malaria, for it does not enter a hitherto non-malarial district except by the introduction of tertio autumnal malaria when this malaria becomes prevalent in a region formerly free; blackwater fever follows in proportion to the intensity of malaria and the capacity of the population to acquire immunity. Also, tertio autumnal malaria may obtain very extensively among children when in places where the adult population by reason of continued attacks in childhood, has acquired immunity. If non-immunes do not enter such places or if after entrance prompt prophylactic and therapeutical measures are instituted against malaria blackwater fever does not prevail.

These propositions are supported by positive evidence, and do not admit of controversy. Every statement made in support of them has concrete facts and the witness of authoritative observers as its basis. The conditions necessary for the generation of hæmoglobinuric fever explain clearly why the disease is absent from places where it once prevailed or is present in those from which it was formerly absent, why it occurs in some malarious countries and not in others, why it obtains in certain areas only in malaria infected districts, and why in restricted localities or even in certain houses the malady may present itself, while those adjacent are free.

Although the evidence associating hæmoglobinuric fever with the presence of malarial parasites is circumstantial, since it relies in great part on the skill and experience of observers, it is none the less strong and authoritative in actuality far more so than that which implies a lack of such association. Notwithstanding the reported absence in isolated instances of proof of malarial infection in blackwater fever during life or at autopsy, the connection between the two is not materially affected thereby, for when all circumstances of the relationship are considered in their entirety, the dependency of the latter upon the former is manifested to an extent unparalleled in the etiology of infectious diseases. Then to the epidemiological evidence of this relationship is added these proofs that in no other malady is malarial infection so constantly present, that in malarious countries other diseases fail to show even in approximate amount of such infection, that mechanical and therapeutical measures instituted against malaria are equally efficient against hæmoglobinuric fever, that prompt and efficient treatment against the one, no matter how greatly it obtains, is successful also in reducing the prevalence of the other, either the truth of the relationship as asserted must be admitted or the existence of an organism dependent upon the conditions enumerated must be assumed. Such an assumption is not supported in biology, either by analogy or fact, unless some vague conjecture of an improbable symbiosis be so included.

Throughout our thesis we have referred to hæmoglobinuric fever as a disease or else have used a synonymous term. We have done this partly in deference to the present custom, and partly to avoid ambiguity. In our opinion it is better to describe hæmoglobinuric fever, as Marchiafava and Bignami have done, as "a syndrome which is encountered not rarely, especially in hot climates, in the course of a malarial infection." For, although medical usage may sanction in some instances the classification of different conditions dependent upon the same aetiological factor as distinctive "diseases," there is no need for such application to the description of the hæmoglobinuric and associated symptoms that occur in the course of a malarial infection."

Unlike some writers, we do not find difficulty in calling blackwater fever a syndrome. It is not necessary

* Hæmoglobinuric Fever in the Canal Zone by D. F. Deeks and W. M. James. I C C Press, Mount Hope, C. Z.

to assume that all malarial infections of a certain intensity are followed by hemoglobinuria, because, for such determination an individual predisposition is necessary. In most cases, but not in all, this predisposition is enhanced by repeated attacks of malaria. That is why regions of the most intense malaria produce the most blackwater fever, for the chances of very susceptible persons becoming infected with malaria are thereby made certainties, while the likelihood of determining a predisposition in less susceptible persons is correspondingly increased. Except in localities where malarial infection and repeated re-infection and relapses are continuous, hemoglobinuric fever is comparatively rare, but it is not more uncommon than are the comatose and algid types of malaria, or any one of the syndromes depending upon interference with the functioning of the nervous system such as a paralysis or a neuritis. These like hemoglobinuric fever may occur at any time in the course of a malarial infection, especially in an untreated or improperly treated one, and do occur most often where malaria is most intense. Since it is not possible to predicate the amount of infection that results in the determination of any of these other malarial syndromes, otherwise than to say that they occur in proportion to the intensity of malaria, it is illogical to assert, as some have done, that blackwater fever should invariably follow when a certain degree of personal malarial infection has been attained. One might as well say that every infection with B tuberculosis is followed by the same symptoms, or that meningitis ensues when a certain number of the diplococci of pneumonia are present.

We know that when such organisms localise in certain parts of the body, definite symptoms follow, and we believe that under certain conditions the toxins of malarial poison produce hemolysis, but why some persons are thus acted upon, while others with equal amount of infection are not, is a problem that still awaits solution, nor does our lack of knowledge in this respect affect our cognizance of the primary cause.

The primary cause in hemoglobinuric fever is either prior or coincident malaria, or both, the immediate cause is sometimes the administration of quinine, but this never acts unless the primary cause has been or is present. With this knowledge we are able to treat the syndrome intelligently, and often to prevent its occurrence, by the removal of the primary cause, and by sending away from the source of infection those who since by reason of personal idiosyncrasy they cannot take quinine at any time without the production of blackwater fever, should not remain in a malarious country.

THE PASTEUR INSTITUTE OF S INDIA

The report of this Institute reached us in the middle of August. It deals with the year which ended on 28th February 1911.

The Institution is financially flourishing, though subscriptions require to be kept up and more are needed.

The Director's report contains much of interest and of value. The virus in use was in its 334th passage on 28th February 1910.

"From Table IV it will be seen that 200 persons out of the 827 who received the full course of treatment had been bitten by animals known to have been rabid, 350 by animals probably rabid, judging by the histories obtainable, 164 by animals of which nothing was known. Prophylactic treatment was indicated for all of these. Ninety-two persons who had come into some sort of contact with animals known to have been rabid were treated because they refused to take any risks. In only 21 instances was there no evidence that the biting animals had suffered from rabies."

During the year 1910-11, the following number of patients came for treatment, 148 Europeans, 73 Eurasians and 606 Asiatics, or 827 in all.

The following table is of interest, showing the animals that bit, scratched or licked the patients —

Species of animals	Number of persons bitten, scratched or licked
Dog	788
Jackal	14
Cat	2
Guinea pig	1
Man	18
Horse	1
Buffalo	1
Cow	1
Ass	1
	827

Scientific men will appreciate the publication of the following cases, of which we quote a few examples —

DEATHS FROM HYDROPHOBIA

During treatment

1 A Hindu boy from Mysore was bitten by a dog severely on right hand on 21st April 1910. He arrived here for treatment on 14th May 1910. Hydrophobia developed on 23rd May 1910 during the course of treatment, i.e., 31 days after the bite.

2 A Hindu boy of Tirukkoyilur, South Arcot District, was bitten by a dog on the left hand on 24th July 1910. He came here for treatment on 10th September 1910. Hydrophobia developed on the 4th day of treatment, i.e., 53 days after the bite.

A calf bitten by the same dog died of rabies 3 weeks after the bite.

3 Another Hindu boy, aged 7, of Karabgaon (Bombay Presidency), who was severely bitten by a dog on the chest on 6th January 1911, arrived here for treatment on 22nd January 1911. He developed symptoms of hydrophobia on 31st January 1911, i.e., 25 days after the bite, during the course of treatment and died on 1st February 1911.

A Mahomedan woman bitten by the same dog who came for treatment survived.

Deaths within 15 days after the completion of treatment

1 A Mahomedan boy of Hindupur, bitten by a dog on the face on 14th April 1910, arrived here for treatment on 17th April 1911. He died of hydrophobia on 8th May 1911, 8 days after completion.

2 A police duffadar from Mysore was bitten by a dog on the right ring finger on 28th June 1910. He came here for treatment on 17th July 1910. He died of hydrophobia on the 6th day after the completion of treatment.

The following is of interest —

"FACTS BEARING ON THE VIRULENCE OF RABIES IN INDIA"

Vellore case—Three persons were bitten by one dog. One died from hydrophobia 40 days later, one was living 70 days after the bite, one was treated at Coonoor and survived.

Aicut case—Seven persons were bitten by one dog. Two died from hydrophobia 40 and 60 days later. Three were alive after three months. One could not be traced. One was treated at Coonoor and survived.

Secunderabad case—Two persons were bitten by one dog. One died from hydrophobia 45 days later, the other was treated at Coonoor and survived.

Kurumbaranad case—A dog bit a calf, a cow, and a boy. The cow and calf both died from hydrophobia 27 and 29 days later. The boy was treated at Coonoor and survived.

Kolhapur case—A dog bit 8 persons. Three died from hydrophobia from 5 to 6 weeks later. Five came to Coonoor for treatment and survived.

"The number of persons coming to Coonoor for treatment is steadily increasing year by year, and it is impossible to forecast when the limit will be reached. It is impossible to ascertain what the real mortality from rabies in villages is, unless the special measures which have now been suggested to Government be taken."

There can be no doubt that the persons bitten who arrive in Coonoor form an inconsiderable proportion of the total number of the bitten. The number of our patients, in consequence, depends largely on the interest displayed by local authorities in promulgating news of the existence and object of the Institute and in persuading people to go to Coonoor.

For instance, from the neighbourhood of Badagai alone 30 patients have come to Coonoor for treatment during the past two and a half months. This is in all probability not so much due to the exceptional prevalence of rabies round Badagai at the present time, but to the placidity of the Tahsildar in sending everyone for treatment whom he hears has been bitten by a rabid dog."

The staff of the Institute consists of Major J. W. Cornwall, M.D., I.M.S., Captain A. G. McKendrick, M.B., and Sub-Assistant-Surgeon S. Ramasawmy Aiyai, and they are to be congratulated on a very successful year of both practical and scientific work.

HEALING NOTHING BY DOING NOTHING

In the July number of the *Caledonian Medical Journal* Colonel Kenneth Macleod, M.D., LLD (I.M.S., retd.), has a useful and interesting article on that strange product of the end of the 19th century—Eddyism or so-called Christian science. It has been defined as a thing which is certainly not Christian and certainly not science—but it exists, and Colonel K. Macleod in a very interesting way sums up Miss Eddy's strange and checkered career and the curious doctrine she has put forth.

We need not here trace the history of this neurotic individual, a life of her has recently been published. It is quaint to notice that Miss Eddy claimed some relationship to that most distinguished officer of the Indian Medical Service, Sir John McNeill, G.C.B., Ambassador in Persia.

Colonel K. Macleod gives good reason for believing that Miss Eddy was insane, certainly a

monoideist and visionary and a pronounced neuropath.

THE NEW SYDENHAM SOCIETY

The New Sydenham Society has come to an end, and Sir Jonathan Hutchinson who has done such stalwart work for the Society for many years past, has issued a small book entitled *Retrospective Memoranda*, which includes a subject index of all the many volumes published by the Society since its initiation in 1859.

The good work done by the Society from 1859 to 1907 is known to all, and English Medical literature has been enriched by the translation or republication of some 200 standard works, not otherwise accessible to English readers. Among these may be mentioned Diday's *Inherited Syphilis*, the first work issued by the Society, and its last work was a collection of monographs on the Spirochaeta of Syphilis. Other well-known volumes were Rousseau's *Clinical Medicine*, Hirsch's *Geographical Pathology*—a work not yet superseded, Hebra's *Diseases of the Skin*, Caspary's *Forensic Medicine* in 4 volumes, Charcot's works, Colcott Fox Edition of Morrow's work on *Drug Eruptions*, Cohnheim's *Pathology*, Klebs' and Thomas's book on *Malaria*, Laverian's book on *Paludism* and the wonderful series of Atlases, and the less successful *Medical Lexicon*.

The New Sydenham Society was wound up at a meeting held on January 19th, 1910, and this interesting *Retrospective Memorandum* closes its history and fitsly records the great work done, more especially by Sir Jonathan Hutchinson, who for half a century was Secretary to the Society, and left his mark on all it has done.

We are glad to see that the Ipecacuanha treatment of acute hepatitis is being increasingly used in the military hospitals both at home and in India. The *Journal R.A.M.C.* (in July 1911) has two cases reported, "Striking Examples" of its value. It is a pity that full reports of this successful method of treatment are not published, there must be dozens of cases in the various station hospitals.

SIR WILLIAM LEISHMAN, R.A.M.C., the newly elected President of the *Society of Tropical Medicine and Hygiene*, urges a great attendance at Meetings, and advocates some alterations in the *Transactions*, the establishment of a small technical library and the formation of type collections of microscopic and other specimens of tropical diseases. An Editorial Committee has been formed.

The Managing Committee of the Sleeping Sickness Bureau has decided to publish from this Office a Quarterly Bulletin dealing with the *Leishmania* group of diseases. Dr C. M.

Wenyon, Protozoologist to the London School of Tropical Medicine, will undertake this part of the work. A list of references is now in preparation and will form the first number. Those who wish to receive the new Bulletin should send their names to the Director. He will be glad to have copies of publications on this subject for the Bureau Library.

We are glad to note a steady, if slow, progress in the Rangoon Medical School. The need of such in Burma is imperative, but the Burmese unfortunately are not inclined to join the medical profession. The school began only a few years ago, and the first batch of final year students, 10 in all, have qualified and have been immediately provided with employment. Fifteen new students joined in 1910. We wish this young school every success.

The Journal of Tropical Veterinary Science (Vol. VI, No. 3), published in August, is one of considerable interest. Major Baldrey has a good article on Anti-influenza serum and on the evolution of the *Typanosoma evansi*. The Notes on Parasites are excellent, and the summaries and extracts from parasitological literature are complete and full as usual.

Reviews.

A System of Medicine — By Sir CLIFFORD ALL BUTT, K.C.B., and H. D. ROLLESTON, in nine vols Vol. IX, Diseases of the Skin and General Index Price, 25s net.

THE second edition of this great system is completed by the publication of this the ninth volume, which is devoted to Diseases of the Skin.

The changes in this edition are many, and the place of the late Dr J. F. Payne has been taken by Dr T. Colcott Fox. There are many new articles, and all the older ones have been thoroughly revised. We may mention a few of the articles which struck us as particularly good—that on bacteriology of the skin by Dr Whitfield, on cheloid by Dr Abraham, and on skin necrosis affections by Dr J. Galloway. The parasitic skin diseases are ably and fully treated by Sir Malcolm Morris, and Mr Jonathan Hutchinson writes on drug eruptions. Dr Whitfield's article on Eczema ably deals with a difficult subject. Other good articles are Dr Adamson's on blastomycosis and Pringle and Adamson's on diseases of the sweat apparatus, but there is little new in the brief notice of prickly heat, a trouble not easily forgotten in the present hot and rainy weather. The volume is well illustrated and constitutes a standard reliable and up-to-date account of the diseases of the skin.

In conclusion, we can congratulate the editors and publishers of the completion of this great

work which for more than a decade to come must remain the standard authority in the English language.

Album of Photographs — Issued by S. I. BRANCH OF B.M.A. London John Bale, Sons, and Danielsson Ltd., 1911 Price 10s 6d net

MAJOR P. C. GABBETT, I.M.S., has done a good work in publishing this admirable album of photographs, which show the enormous amount of pathological material which goes unrecorded in big Indian hospitals like that in Madras. In this work Major Gabbett has been ably assisted by Capt A. C. Ingram, I.M.S. The funds have been generously supplied by the energetic South Indian Branch of the B.M.A. We heartily echo the hope that some day a text-book of Indian pathology and surgery will be written. This book and the excellent little monograph entitled *Four Common Operations* published in Madras have shown the way, and Major L. Rogeis' gleanings from *post-mortem* records in Calcutta published from time to time in these columns have demonstrated the great wealth of clinical and pathological material to hand for any one who will take up this work.

This album consists of 39 photographs, excellently reproduced and illustrating all sorts and conditions of disease, e.g., elephantiasis in many forms, mycetoma, tubercular arthritis, a foetus cyclops, a pair of "Siamese" twins, meningomyelocele, leontiasis and gigantism, myositis ossificans, sarcomata, bronchceles, fibroma of the neck, multiple fibroma, tumours of many kinds, papilloma (due to Miculicz's disease of the eyes, carcinoma of orbit), etc.

It is an admirable album and we congratulate Major Gabbett and his colleagues of the Madras Medical School on its production.

Diseases of the Lungs and Pleurae — By Sir R. D. POWELL and P. HORTON SMITH HARTLEY 5th Edition Pages 740 Price, 21s net Publishers H. K. Lewis, London

IT comes almost as a shock to see a new edition of Powell's *Diseases of the Lungs* after a period of eighteen years one naturally regarded the book as finally and definitely defunct. It is a pleasure to find that the writers have succeeded in retaining the good features that made the book so popular in the early editions and at the same time have brought it thoroughly up to date. The opening words of the preface are rather calculated to arouse criticism, probably many people will dissent from the statement that "the special directions in which medicine has advanced in the past 20 years have been in the application of antiseptic and aseptic methods already established in surgery, to the treatment of internal diseases." The chapter on diseases of the pleura follows the usual lines, but it is disappointing to find that the authors recommend only the orthodox but utterly futile methods of dealing with pneumothorax. More than ten years ago the

article on the subject in Quain's Dictionary of Medicine stated the rational method of dealing with this condition, but it seems to have fallen completely into the back ground in spite of the extremely satisfactory results which it gives when properly carried out.

The chapters on Bronchitis and Pneumonia are on sound lines and offer very little mark for criticism. The section on Pulmonary Tuberculosis comprises 270 pages and is a full and clear exposition of the subject. Dried sputum is regarded as the common vehicle of infection, while the milk of tuberculous cattle is considered of small importance.

Personal contact as in the case of people living in the same room is looked on as being a very uncommon factor in the spread of the disease. The writers give plenty of evidence in support of their view, but we cannot help thinking that the case for the opposite view might have been more strongly stated.

When whole families are wiped out in a few years, it is hard to conceive that person to person infection either by dried sputum or by sputum spray is not an important factor.

The case for and against tuberculin treatment is very faintly stated, the conclusion being that within strict limitations tuberculin is of distinct value, but the dangers of too large doses and of indiscriminate administration are insisted on.

The account of the climates suitable for phthisical patients is quite the most valuable part of the whole book, and altogether for the conservative practitioner there can be no better guide to the treatment of his chest cases than this new edition of Powell.

The Treatment of Syphilis with Salvarsan

—By DR W WECHSELMANN of Berlin, with an Introduction by Prof Ehrlich Translated by Dr A L Wolbarst of New York Published by Rebman Price, 21s net

AMONG the various books dealing with Salvarsan this will naturally take a prominent place as it has received the benediction of Professor Ehrlich and may thus be regarded as being almost an official document. A large part of the book is devoted to a description of individual cases showing the great value of Salvarsan, especially in refractory cases of syphilis.

The occurrence of relapses in a fair proportion of cases is freely admitted, the explanation being that there are certain foci which are imperfectly reached by the drug owing to a defective vascular supply. It seems to be established that there is no danger of producing nerve lesions such as were seen after atoxyl and other arsenical preparations. Wechselmann strongly favours the hypodermic method of administration while Ehrlich prefers the intravenous.

The only serious contra indications to the use of the drug are a tendency to haemorrhage and cardiac disease. In the case of children

and infants it appears to be essential to begin with a very small dose and to give a larger dose some weeks later. A full and apparently frank account is given of the local and general complications which may be expected, including those due to the condition of hypersensitivity.

The suggestion is made that Salvarsan acts primarily by destroying the spirochaetes and secondarily through the action of the toxins released from the dead spirochaetes as a sort of vaccination. It is only by this action that it is possible to explain the curative action of the milk of nursing mothers who have been treated by Salvarsan as the milk contains little or no arsenic.

The value of repeated doses in cases of recurrence is insisted on, and the existence of a positive Wassermann reaction is regarded as a definite proof of the continued existence of the infection. The book is very well got up, and the coloured plates are of the highest quality, the high price of the book combined with the certainty that in twelve months it will be quite out of date will probably prevent it from having a large sale in India.

It is an essential to every medical library and will be of great value to medical men who decide on using Salvarsan in their practice. The one drawback in connection with the book is that the author has had little experience of the intravenous method of administration, and that he is obviously prejudiced against it, while most people who have had much experience of both methods agree with Ehrlich in favouring the intravenous route.

Traité Pratique de Pathologie Exotique.

—By GRALL ET CLARAC Vol V "Intoxications et Empoisonnements, Bell Bell" Pp 450 Price, 12 francs J B Baillière et Fils, Paris

SEVERAL of the previous volumes of this valuable treatise on Tropical Diseases have already been reviewed in these pages.

This volume opens with an account of Bell-Bell which is extremely disappointing, there is no reference to the recent work done on the subject in the Malay Peninsula and elsewhere. Manson's views are stated and discussed at some length and the author concludes that the disease is due to an intestinal infection which is maintained by repeated doses of an infective agent generally contained in rice but also capable of living in other articles of food.

Neither the Phosphorus starvation theory nor the theory of a toxin produced in rice by a micro-organism are stated.

There is an interesting chapter dealing with poisoned arrows, but there is no mention of those used by the various tribes of India and Assam. Poisoning by quinine is fully dealt with, the risk of abortion from ordinary doses of quinine is stated to be practically nil, and it is properly held by the author of the article that in cases

of malaria in pregnancy the best means of preventing abortion is the administration of full doses of quinine

Some very interesting experiments are described, which show that when tetanus spores are injected into an animal with negative results, the subsequent administration of a hypodermic injection of quinine either at the site of the injection of the spores or at some other place causes the development of an attack of tetanus.

The author, however, regards faulty technique as the common cause of tetanus following on quinine injections, but the experience in India seems in favour of the idea of the pre-existence of the tetanus germs either in the skin or elsewhere in the body and of the local necrosis caused by quinine, giving them an opportunity of developing. The article on snake poisons is very complete, but the question of dosage of the antivenenes is left in an unsatisfactory state. It would appear that prompt and energetic local treatment offers a much more hopeful means of dealing with a case of snake-bite than the specific treatment at present available. The other poisonous animals are very fully discussed, and altogether the book will be found of great value as a work of reference on animal and vegetable intoxications, though it is not likely to have a large sale amongst medical men in India.

The Emergencies of General Practice.—

By P SARGENT & A E RUSSELL Second
Edition Pp 453 Price, 15s net London, 1911
Oxford Medical Publications, J Frowde and
Hodder and Stoughton

A NEW edition of this useful book has been rapidly called for, and opportunity has been taken by the authors to practically re-write and re-arrange the whole book, and Dr P Smith has added a valuable chapter on the Emergencies of Insanity

The book is intended as a supplement to systematic works on Surgery and Medicine

Diagnosis is discussed in a practical manner, and in many cases it is the diagnosis that in itself constitutes the emergency. As regards treatment, the method of immediate treatment are fully entered into, after-treatment not being of the same emergency nature. The book is clearly printed and well got up and is fully illustrated.

We have read most of the chapters with pleasure and with profit, and if we may mention any which seemed to us more admirable than the others, it was that on acute abdominal disease, and on such emergencies as haemorrhage, intestinal obstruction, perforation, appendicitis and peritonitis. The chapter on abdominal and pelvic injuries is excellent, as are also those on the eye and ear.

This is an eminently practical volume and can be genuinely recommended to Civil Surgeons and others in practice in India.

SPECIAL ARTICLE

MALARIA IN BOMBAY.

DR C A BENTLEY, M D, DTM, etc, has published a large and extremely valuable report on the causes of malaria in Bombay Dr Bentley's work while on special duty in Bombay is well known and he is recognised as one of the leading experts in antimalarial work in India

The present report is a very full and complete one, but as it runs to 179 pages, we cannot do more than briefly indicate to our readers what the report contains, and we strongly recommend all those interested in antimalarial work in India to obtain and read the volume for themselves.

This report is only one indication of the very considerable amount of good antimalarial work now being done in India, and we hope the time has passed when a writer of a volume on the prevention of malaria can ignore the work done and attempted in India.

Dr Bentley's report begins by a description of Bombay, its population, sanitation and vital statistics. The second part of the Report gives a history of malaria in Bombay, and this chapter is recommended to those visionaries who imagine vainly that malaria is a new disease in India (*I M G*, Sept., p 349). It will also be remembered that many years ago Dr Vandyke Cattell (*I M S*, retd.) was the first medical man in India to confirm Laveran's discovery of the malaria parasites.

Chapter II deals with "the measurement of malaria" in Bombay and is full of most valuable information obtained by the examination of blood specimens and spleen censuses. The chapter on epidemic malaria and the examination of the great outbreak in 1908 is very interesting. The attempt to reckon the cost of malaria is instructive. The following anophelines are founded in Bombay —

"According to the modern classification the Anophele fauna of the Island may be divided into five groups

- | | | | | |
|--------------------------|----------------------------|-----|-----------------|-------------------------|
| or genera — | | | | |
| (1) <i>Nyssomyzomyia</i> | represented by one species | | <i>N. rossi</i> | |
| (2) <i>Neocellia</i> | " | " | " | <i>N. stephensi</i> |
| (3) <i>Myzohynchus</i> | " | " | " | <i>M. barbutorstris</i> |
| (4) <i>Nyssohynchus</i> | " | two | " | <i>N. jamesi</i> |
| | | | | <i>N. fuliginosus</i> |
| (5) <i>Myzomyia</i> | " | two | " | <i>M. listoni</i> |
| | | | | <i>M. culicifacies</i> |

James and Liston in the 1st edition of their monograph on the Indian Anophelines also mention *Nyssomyzomyia punctulata*, *Pyretophorus jeyporiensis* and *Nyssorhynchus theobaldi* as having been found in Bombay, but these species have not been met with during the course of the present enquiry."

There is an admirable section devoted to the natural enemies of mosquitoes—such as fish, ants, aquatic insects, aquatic beetles, "Mayflies," coenobia larva, "phantom larvae," but it is doubtful if any of them can be turned to any practical use.

As regards fish, Dr. Bentley writes as follows—

"In conclusion it may be stated that, as a result of the experiments and observations that have been made, there appears to be no reason why fish of the species mentioned should not be successfully employed in protecting many of the small permanent collections of water in Bombay, such as wells, fountains, and masonry tanks, from the breeding of anophelis and other mosquitoes, provided that the conditions indicated below are adhered to."

These conditions are—

(1) The number of fish employed must be sufficient for the task and proportionate to the amount of water to be protected.

(2) The water must be kept free from weed, leaves, flowers and floating matter which might afford cover to mosquito larva.

Of course, it must be understood that fish cannot be employed in wells which are too foul or stagnant to allow of there being a sufficient supply of oxygen for them. Wells in this condition must be protected in some other manner."

We can only quote a few of Dr. Bentley's remarks on artificial means of destroying mosquito larva—

"The larvicides most commonly used are crude petroleum (otherwise known as liquid fuel or *petroleum*) and kerosene. Of these kerosene is more effective than *petroleum*, but a mixture of about equal parts of kerosene and *petroleum* is more efficient than either oil by itself. *Petroleum* has the advantage of cheapness, and its colour shows when it has been applied, but it does not spread so easily as kerosene, is more apt to collect in large blobs and is much slower in its action. Unless it is used in sufficient amount and carefully spread, it is of very little use, and as it tends to collect in large blobs with free spaces in between mosquito larva easily escape suffocation. In wells in which many gallons of *petroleum* have been placed, mosquito larva have been afterwards discovered, even when there was sufficient oil present to have covered the surface of the water many times over. Kerosene costs more than *petroleum* and is more liable to be stolen, but it spreads better on water and is decidedly quicker in its action. Unfortunately like *petroleum* it is liable to be blown to one side of a pool if there is much wind, and it may be found necessary to repeat the oiling of a pool three days in succession before all the larva and pupae are destroyed.

In a series of experiments conducted in the New Dock Works early in 1909, it was found that of 68 pools of water containing numerous larva which were carefully oiled with a mixture of *petroleum* and kerosene, applied to them by means of spray, 47 contained many live larva the following day. They were all treated once more but on being examined again the next day scanty larva were found in 22, and after being treated a third time a few larva were still present in 7. In another series of 44 pools most carefully oiled by being sprayed repeatedly with a mixture of kerosene and *petroleum*, 12 showed a number of living larva the next day. These observations show that where it is a matter of importance, as in the New Dock enclosure that larva should be destroyed thoroughly, it is not sufficient to make a routine application of *petroleum* or kerosene once a week, as many mosquitoes continue to reach maturity in spite of it."

"As the result of an enquiry regarding the larvicides in use in Panama, Colonel W. G. Gorgas, U. S. A., the Chief Officer in charge of the sanitation of the Canal

Zone, very kindly supplied the following formula and directions for preparing a larvicide, which has been used with very great success at Panama:

Gorgas' Larvicide—

Cubolic acid, crude	..	100 gals
Resin	..	66 lbs
Solution of caustic soda	..	(20 lbs of the solid in solution)

"That method of manufacture is to place the cubolic acid in a vat and heat to the boiling point by a steam coil. The resin is then powdered and added to the acid, is melted by the heat, and goes into solution. During the process of adding the resin, the mixture being formed is thoroughly stirred by a paddle fixed on an iron rod in the vat and revolved by a crank. The caustic soda is then added."

Conditions favouring malaria—

This is a very valuable chapter and we can only here extract the headings thereof—

"As malaria is due to the presence of a minute animal parasite which passes one stage of its existence in the blood of man and another in the body of a female anophelis mosquito of a suitable species, the occurrence of malarial disease in any place is dependent upon the presence of the three factors

- (a) Man,
- (b) The Malaria parasite,
- (c) A suitable species of anophelis,

and in general it may be said that the severity of malaria depends upon the numerical relations of these different factors.

Broadly speaking, it may be said that in malarious places the effect of the disease among the population is proportionate to the number of malarial parasites actually present. If there are only a few million parasites distributed among a thousand people, there will be only a few cases of mild malaria, whereas if the total number of parasites is many million times greater, both the number of sufferers and the severity of the cases will be proportionately increased.

The number of malarial parasites present in a community tends to increase or decrease under certain conditions—

(1) The presence of a large number of anophelis mosquitoes of a species capable of carrying malaria tends to produce an increase in the number of parasites owing to the spread of infection, whereas a reduction in the number of suitable anophelis tends to produce a fall in the total number of parasites due to a lessened spread of infection.

(2) Among infected people, climatic, social and economic and other conditions, if favourable to man, tend to reduce the total number of parasites, by increasing the powers of resistance of the persons concerned, whereas if unfavourable, they may cause an increase in the number of malarial parasites by lowering the powers of resistance of these persons.

It is necessary therefore to consider in some detail both the conditions which may influence the number of malaria carrying anophelis and those which may influence man's powers of resistance to malaria.

The conditions relating to anophelis, which may influence malaria, are—

- (1) Species of anophelis
- (2) Number of anophelis
- (3) Character of breeding places—
 - (i) Drainage
 - (ii) Swamps
 - (iii) Rice growing and irrigation
- (4) Rainfall
- (5) Other climatic conditions—
 - (i) Temperature
 - (ii) Humidity

Conditions which influence man in relation to malaria—

- (1) Climate
- (2) Economic condition
- (3) Social condition
- (4) Overcrowding
- (5) Temporary aggregations of labour (soil disturbance)
- (7) Treatment
- (8) Migration"

"The fact that malarial infection cannot spread in the absence of the carrier of the disease is often overlooked. If every person who entered Bombay was infected with malaria, there could be no spread of the disease if the comparatively few breeding places of dangerous anopholes were efficiently controlled.

In conclusion, it may be pointed out that there is evidence that the amount of malaria contracted locally is many times in excess of that introduced into the island from without, and there is little question that from the point of view of malaria prevention the importation of malarial infection into Bombay may be ignored."

Dr Bentley's discussion of results is of great importance, we quote as follows—

"As a general conclusion, it may be stated that a consideration of all the available facts leads to the opinion that, the antimalaria work carried out in the city prior to 1909 (with the exception perhaps of work at Malabar Hill and Bhandarwada) has failed to prevent an increase of malaria.

Recent Results of Malaria Prevention—In 1909 shortly after the commencement of the special investigation, the results of which are detailed in this report, more vigorous measures of malaria prevention were adopted in the City, especially in the neighbourhood of the Docks. These measures have been referred to at length in a former section, and it is only necessary to mention certain facts which appear to show that the measures adopted have been of some value, and that a mitigation of malaria has followed upon their adoption.

In support of this opinion it may be pointed out that—

(1) There has been a considerable reduction in the spleen rate of children resident within the area in which the measures have been applied.

(2) There has been a marked reduction in the cases of fever admitted to the local dispensaries.

(3) There has been a fall in the total mortality among people resident in the area affected by malaria owing to proximity to the Dock Works.

(4) And more especially the mortality during October and November and the deaths among young children within this area has shown a great decrease.

Spleen Rate—Early in 1909 before the adoption of the more vigorous measures subsequently undertaken by the Municipality, Port Trust and Railway Companies, an examination of 597 children resident in the Esplanade section, the area immediately adjoining the New Dock Works, showed 438 or 73.38 per cent to possess enlarged spleen. A second spleen census carried out in this area late in 1910 showed 250 children out of 516 to have enlarged spleen or 48.4 per cent, a difference of nearly 25 per cent. A similar reduction has also been effected in the spleen rate among children resident in the portion of the North Fort which lies between Frere Road and the New Docks. Early in 1909 among 366 children resident there 166 or 49.4 per cent showed enlarged spleen. Late in 1910 among 560 children examined there 200 or 35.7 per cent showed enlarged spleen, a reduction of 13 per cent. In one large chawl with a population of 1,200 the spleen rate dropped from 54 per cent to 29 per cent at the end of 1909.

Fever admissions—The fall in cases of fever admitted to the Frere Road dispensary is equally striking."

We should also draw attention to the useful chapter on "the legal aspect of mosquito-prevention," and the attention of all practical sanitarians will be given to the collection of facts and figures given in the section on the **Cost of malarial prevention**. In this chapter a large amount of information is collected from Ismailia, Port Said, Havana, New Orleans, Port Swettenham and Klang, Kaitouin, Hong-Kong, Panama, much of which is taken from Sir R. Ross' book on *The Prevention of Malaria*. Dr Bentley puts forward two schemes for Bombay—

Scheme I—Prevention and destruction of mosquitoes of all kinds throughout the City—To carry out efficient inspection of all premises on the island in order to prevent the breeding of mosquitoes would necessitate an increase in the existing staff by about 225 sub inspectors. As the rate of pay of a sub inspector in Bombay is Rs 40 per mensem, this item alone would amount to a sum of Rs 1,08,000 per annum. And as each of these inspectors would require about three coolies to assist him and to carry the appliances and material required for discovering and destroying mosquito larvae, this would necessitate an extra staff of about 775 labourers, on a rate of pay not much less than Rs 12 per month for each man. The cost of these men alone would amount to nearly Rs 1,11,600 per annum, and the total cost of this extra staff would be Rs 2,19,600.

"Briefly the estimated cost of Scheme I is as follows—

	Rs
225 sub inspectors at Rs 40 per mensem	1,08,000
775 labourers at Rs 12 per month	1,11,600
16 full sanitary inspectors at Rs 150 each per mensem	28,800
32 peons at Rs 12 p.m. each	4,608
Well cleansing gangs	8,400
Fish gangs	3,000
Head office establishment	17,000
Increased cleaning and departmental work	50,000
Material, lajvacides, sprayers, etc	1,00,000
	<hr/>
	4,31,400
	per annum"

Scheme II—But there is another alternative. If it were decided to limit all measures to those against malaria carrying mosquitoes alone and to carry out the work only in A, B, C, D and F Wards, the staff suggested for special all mosquito work could be considerably reduced, as it would be necessary to allow for weekly inspections in only a few areas such as the New Dock Works, Railway yards, etc. It would not be possible, however, to reduce the well cleansing gangs, and the staff responsible for stocking wells with fish very greatly. Neither would it be possible to dispense with the special officer and the head office. The employment of one man who could devote his whole time and attention to directing and controlling the work, and who was responsible, in addition, for the preparation of the annual malaria report, is the most essential part of the scheme, and success is not likely to be attained unless such a man is appointed. But it is probable that the work could be accomplished in a satisfactory manner for less than Rs 1,00,000 per annum. It would be necessary, however, for the Port Trust and Railway Companies to continue their special anti-mosquito work which should be under the direct control of the Special Malaria Assistant to the Health Office.

"The estimated cost of Scheme II is as follows —	Rs
Cost of staff for partial work in A, B, C,	
D and E Wards	54,000
Well gangs	11,000
Head office	17,000
Material, etc	40,000
Deduct from this the cost of a certain number of inspectors and labourers already employed"	

An unsatisfactory aspect of this great question is the degree of opposition by the better class and educated inhabitants of Bombay who have invoked religious and other objections to any scheme for improving the health of the people. The poorer classes raised little or no objections—but as Dr. Bentley writes—

"This attitude is not universal. Unfortunately it is among the very classes who, if they chose to do so, could eradicate autochthonous malaria from the greater part of the city within a year, that opposition has been chiefly met with in the past, and this opposition is likely to prove the greatest obstacle in the future."

Early in the investigation very little difficulty was met with in the examination of wells and other possible breeding places on private property, but directly action began to be taken by the municipal authorities against owners of such breeding places, opposition was encountered more frequently, and this opposition usually came from those who were educated, wealthy and influential. In one case, a wealthy and influential house owner, possessing many houses in one of the best parts of Bombay, threatened to take proceedings for trespass in the event of any of his properties being visited. In another case, the owner of a large mansion, in the grounds of which there were five wells objected to them being examined and stated that for eight years no municipal inspector had crossed his threshold, but eventually he allowed the examination to proceed after being informed that it was for the purpose of an investigation under Government."

Dr. Bentley has also a very useful chapter on the use of quinine, which deserves more space than we can here give to it—

"But to make quinine a popular remedy it must be administered in a palatable form, and although sugar coated tablets may not be quite so effective as solutions of quinine, the powdered drug, or even uncoated tablets, there is little question that they are very much better than no quinine at all, and the result of practical experiment has been to shew that when dealing with large numbers of people among whom persuasion and not compulsion has to be relied upon, sugar coated tablets of quinine are more generally effective than any other form of the drug."

A considerable amount of quinine in this form is already consumed in Bombay not only among European and educated Indians, but among certain of the poorer classes. Usually sugar coated tablets containing 2 grains appear to be used. They are sold in the bazaar for about Re 1.4 a bottle of 100. But there are many people who do not know of them or cannot afford to purchase as large a quantity as 100. Among the better class of coolies many do not care to attend hospitals or dispensaries for gratuitous treatment, but they will readily purchase medicine that they think is really useful, and it is these people who will welcome the sale of quinine tablets."

Dr. Bentley has an admirable concluding chapter from which we take the following—

"The conclusions that have been reached regarding the public measures of malaria prevention for Bombay are as follows—

(1) The measures should be directed against mosquitoes, but the suppression or reduction of the species of anopheles that carry the disease must first be aimed at.

(2) The measures must be so continued and directed as to bring about not merely a mitigation of the disease but the eradication of autochthonous malaria from the city.

(3) The more rapidly the measures are carried into effect, the greater will be the certainty of their complete success.

Assuming that the Municipality decides to seriously attempt the eradication of malaria, the following steps must be considered. It will be necessary to—

(1) decide whether the measures shall be taken against all mosquitoes or be directed specially against those responsible for malaria;

(2) vote sufficient money for the purpose;

(3) sanction the appointment of a Special Assistant to the Executive Health Officer, who can devote his whole time to the direction and supervision of the necessary measures;

(4) sanction an increase in the existing subordinate staff of the Health Department, so as to allow of the necessary numbers of Inspectors and labourers required for the work;

(5) obtain adequate legal powers for carrying out the necessary measures."

We heartily commend this valuable report to our readers

Medical Society

ASIATIC SOCIETY OF BENGAL

AT the adjourned meeting of the Asiatic Society, Medical Section, July, the following cases were shown and read—

I Clinical case A case of spontaneous removal of half of the upper jaw in a Hindu boy of 14, apparently the result of cancrum oris occurring during an attack of acute fever of unknown nature was shown by Dr. Adrian Caddy.

II A demonstration of Ophthalmological Instruments by Lt.-Col F P Maynard

III A paper on the treatment of Kala Azar by Salvarsan was read by Major E E Waters, M.R.C.P., in which he described three cases where he had used the drug without success both intravenously and intramuscularly.

Major Waters' paper was discussed by Dr. Bhramachari who described several cases in which he had used the drug.

In one case he employed it intravenously with no ultimate change in the condition, in three cases he adopted the intramuscular method, in one of these there was a temporary improvement but no permanent benefit, the other two were not even temporarily improved. He considered the results to be unsatisfactory on the whole, but hoped that in early cases it might prove to be of benefit.

He also tried small doses, 2 grammes in a case of Malaria (Malignant tertian) repeated in 4 days, but without effect.

Col Calvert said that he had tried Salvarsan in several cases of Kala Azar, and while he had seen no marked improvement he had also seen no harmful results. He considered that the drug should be given a further trial in early cases as most of the cases in which it had been used hitherto were too advanced to give it a fair chance.

Dr Elwes thought that the drug should be given intramuscularly so that the absorption might be prolonged.

Capt Megaw said that the only hope of success lay in large doses administered at an early stage, instancing the cures recorded by French observers which had been obtained in the diseases produced experimentally in dogs.

Here the doses had to be relatively much larger than those hitherto employed in man—2 centigramsmes per kilo of weight. He mentioned that Major Murray and Capt Denham White had been successful in one or two cases apparent cure having resulted. Major Waters in his reply pointed out that his cases were by no means in extremis, but agreed that it might be worth while to give the drug a further trial in earlier cases.

ANNUAL REPORTS

I—HOSPITALS, BENGAL

The Triennial Report on the Hospitals and "Medical Institutions" of Bengal, including Calcutta, was published in July 1911.

It is a record of progress and the report is full of interesting matter from which we propose to give extracts.—Colonel G. F. A. Harris, V.H.S., has been in charge since April 1910, and submits the report.

The list of improvements is a long one and includes several very important developments, e.g. (1) new Surgical Block or Prince of Wales Hospital opened a few months ago which cost over 10 lakhs' (see *I.M.G.*, p. 182 supra), (2) paying patients blocks for orthodox natives of India, cost Rs 87,000, subscribed for by three Marwari gentlemen, (3) Electric lift in Medical College, (4) Cholera Hospital, cost Rs 77,000 paid by Government, (5) Electrical annex, Rs 18,685, (6) addition to the nurses' quarters, Rs 15,120, (7) conversion of old nurses' quarters, Rs 21,733, (8) the paying block of Presidency General Hospital, called the Woodburn Hospital, built and equipped at a cost of over 3½ lakhs, (9) numerous minor improvements at the General Hospital, (10) Campbell Hospital (one barrack cost nearly 2 lakhs), nurses' quarters (Rs 68,429, of which Rs 40,000 came from the Minto Fund), new small wards cost Rs 68,000 paid by Government, plots of land costing nearly 1½ lakhs required, gaslighting, &c., &c., (11) Mayo Hospital new buildings, cost Rs 91,092, (12) Howrah General Hospital, out door department, cost Rs 16,616, new female ward, cost of both these borne by native gentlemen, and new surgical block to cost Rs 30,000 is under construction.

Colonel Harris can truly say as follows—

"Having been continuously in Calcutta for more than 11 years and for the greater part of it associated with one of its chief medical and educational institutions and the groups of hospitals attached to it, I have observed the vast improvements that have been gradually effected in these hospitals in this city not only in respect of their buildings but in their equipment and in their internal administration. It has been truly said that some work of progress which has been achieved in the past few years the Government have naturally contributed by far the most by assigning from time to time most liberal grants which were supplemented in several instances by munificent donations from Indian gentlemen. Much credit is due to the able staff attached to these institutions for their zealous and loyal co-operation in this respect and for the large amount of medical and surgical relief afforded by these institutions

during the past three years not only to the sick poor of Calcutta, but to the sufferers outside the limits of Calcutta."

Calcutta now possesses a group of Hospitals and medical institutions almost worthy of the second city in the British Empire."

As regards the District Hospitals or Charitable Dispensaries as they are humbly called, we read of 24 new ones opened, making a total of 510 dispensaries at work in the province, excluding Calcutta."

But what are 510 dispensaries among over 57 million people?" Colonel Harris writes—

"The number of dispensaries on the list is not adequate to meet the medical needs of the Province. From the Civil Surgeons' reports I find that proposals for the establishment of new dispensaries have been made in many districts and have, in some cases, much advanced but want of funds has been the main obstacle preventing these schemes from coming to maturity during the period under review. As instances of inadequacy of dispensaries for the requirements of districts, it is sufficient to say that each dispensary in the Muzaffarpur district still serves a population of 229,506 persons, in the Saran district the proportion is 1 to 172,107 and in the Champaran district 1 to 137,727, that is to say, there has been not much improvement in the position indicated in the last report. It is hoped that in the course of the next three years the wants in this respect will be met in several places."

The following extract is of great interest—

ITINERANT DISPENSARIES

"Besides hospital relief, medical officers in charge of dispensaries are deputed in this Province to visit outlying markets, and afford medical aid to the people assembled there. By this means not only the existence of the dispensary is made widely known, but a large amount of sickness is relieved, and the reputation of the hospital increases. This system was followed during the triennial period under review in the same 21 districts in which it was in operation in 1907. Its advantages are so manifest that local funds could not be better spent. There are in this Province certain places which are distinctly situated from established centres of medical relief, water-girt, and which can only be easily reached by boat. For such places floating dispensaries in charge of medical men would be a great boon. There is one such institution in the Cuttack district, mention of which was made in the previous report, which has become very popular having treated 5,176 patients in 1908, 5,332 in 1909 and 6,907 in 1910. In the Burdwan district (Bilasore subdivision) one itinerant dispensary with head quarters at Oora was started at Government expense for the benefit of its khatis or halahal tenants. The experiment has been a great success, the dispensary having treated 5,778 patients in 1908, 7,249 in 1909 and 8,048 in 1910. In the Burdwan district a floating dispensary was established which worked along the Bhagirathi and Khari rivers, and was much appreciated by the people. It was better organised in 1910 with the result that 2,052 patients were treated in that year against 779 in 1909. For the Sundarbans tract in the Khulna district the district board provided a dispensary of this kind for six months in 1910. The number treated was 467. Much good work can be done in this way, and if Civil Surgeons and local bodies in other districts could start such dispensaries in places where there is absolute necessity for them, there is no doubt that they will be successful."

The Surgical section of these Annual Reports is always of interest, and we quote Colonel Harris' remarks as follows—

"Amongst the important operations there were 2,265 extractions of the lens in 1908, 3,105 in 1909 and 3,201 in 1910. Vision was restored in 93·67 per cent of the cases in 1908, 91·45 in 1909 and 95·7 per cent in 1910. There were 83 Lithotomies in 1908, 91 in 1909 and 77 in 1910 whilst Lithotripties the crushing method numbered 104 in 1908, 114 in 1909 and 115 in 1910. The later and more modern method will, I have no doubt, gradually replace the older cutting process. In Lithotomy operations patients are kept much longer in bed. The number of Ovariectomies rose from 8 in 1908 to 23 in 1909 and 24 in 1910, the number of deaths being 1, 4 and 2, respectively. A few years ago this operation was less often performed as it was considered a very formidable one. Modern technique and aseptic methods have made it one of the safest of the large operations. There were 71 Lipaplasties with 18 deaths in 1908, 76 with 25 deaths in 1909 and 58 with 18 deaths in 1910. Radical cure of hernia was performed in 67 cases with 3 deaths in 1908, 126 with 5 deaths in 1909 and 157 with 1 death in 1910, while operations for straining hernia numbered 55, 52 and 59, the number of deaths being 12, 6 and 10, respectively. Scrotal tumours were removed in 168 cases with 2 deaths in 1908, 231 and 1 in 1909 and 177 and 3 in 1910. This disease is very common among the people of Orissa especially in the district of Cuttack. In the Cuttack General Hospital altogether 420 scrotal tumours of filarial origin were removed during the past three years with great success. Of the 143 removed in 1910 the tumours weighed from 6 to 8 lbs. Septic infection is nowadays a rare complication of such operations. Major

R P Wilson, I M S, performed 78 abdominal sections in the three years under review followed by Captain E D Thurston, I M S, with 72. This is most creditable to them. The surgical equipment of those hospitals which I have visited included in most cases all the necessary instruments. In some the stock, however, was not up to date, while in some the cataract knives which are so much in requisition, were not in a satisfactory condition. I know more funds are necessary to have a complete stock, but some of the improvements can be effected by the personal attention of the medical officer in charge of the dispensary to the condition of the instruments by frequent inspection.

Including Calcutta hospitals the total number of operations performed in Bengal was 204,414 in 1908, 212,429 in 1909 and 212,608 in 1910. The following are the offices in districts who performed the largest number of more important operations during the period under review—

Captain E O Thurston, I M S, Bhagalpur, Gaya and Monghyr (1,603 operations); Lieutenant Colonel C E Sunder, I M S, Gaya and Patna (835); Major B C Oldham, I M S, Patna (693); Major B R Chatteerton, I M S, Serampore and Muzaffarpur (575); Major R P Wilson, I M S, Burdwan and Cuttack (496); Major T H Delany, I M S, Shahabad (402); Major J W F Ruit, I M S, Muzaffarpur, Purnea, Muhsidabad and Hooghly (397); Captain F A P Barnard, I M S, Bhagalpur (363), and Captain F P Connor, I M S, who was at Gaya for about nine months, performed 386 operations. Assistant Surgeon Tripura Charan Guha, Bettiah, performed 804; Assistant Surgeon Surendra Nath Ghosh, Madhubani (612); Assistant Surgeon Rai Ananda Lal Bose Bahadur, Cuttack (394); Assistant Surgeon Tarak Nath Mittra, Bankipore, Buxar and Dumraon (363), and Assistant Surgeon Syed Mahomed Afzal, Sisaram, Birkipore and Patna (356).

The number of operations performed in the United Provinces of Agra and Oudh was 202,519 in 1908, 199,458 in 1909 and 209,511 in 1910. It is evident from the foregoing figures that there has been great activity in the surgical work performed throughout the Province of Bengal during the triennium under notice.

Did space permit we could make many more extracts from this valuable and professionally interesting report—but we can only find room for the following extracts—

"Excepting at the Eden Sanatorium at Daireeling for Europeans and Anglo Indians, where trained nurses are employed, nursing in district hospitals has hitherto been done (and is mostly done) by ward coolies helped by *dhaus* in the female wards. At the Cuttack General Hospital and at the Berhampore Hospital attempts have been made that the Indian patients will also be nursed by European nurses. In both places the nursing was supervised by European ladies connected with religious denominations. The Civil Surgeons concerned paid a high tribute to their devotion and the untiring care bestowed by them on patients, which have much enhanced the efficiency and the popularity of those institutions. The arrangements in short were an unqualified success. Unfortunately, however, the Itinerant Sisters of Charity were withdrawn by the head of their denomination from the Berhampore Hospital in spite of strenuous endeavours made by the Civil Surgeon and this department for their retention. Trained nurses have now been appointed in their places, and Government has liberally contributed Rs 1,200 per annum with effect from December 1910 towards the cost of the new nursing establishment of that hospital. Want of funds is put forward as an obstacle in making similar suitable arrangements elsewhere, but the cost is certainly not prohibitive in all cases. In the meanwhile Civil Surgeons have undertaken to impart the elements of nursing to the inferior staff in this respect. In some hospitals the *dhaus* and midwives of the staff are also being educated to do this duty. The matter is of importance to hospital administration and in time to come it will be possible I hope, to record a marked improvement in this respect. Steps are being taken to employ European nurses at the Muzaffarpur and Hathwa Hospitals."

In this Province Civil Surgeons are ordinarily required to pay four visits annually to each outlying dispensary in their districts. The value of such inspection is undoubtedly. The general rule of four visits has in the past been occasionally relaxed by this department, in cases where strict compliance with it was impossible or inexpedient, by fixing upon the special representation of Civil Surgeons a reduced number of visits to certain dispensaries, i.e., in cases of institutions which are either situated at a distance from headquarters or are inaccessible. During the past three years all outlying dispensaries were inspected by these officers except 17 in 1908, 19 in 1909 and 16 in 1910. Some of these, it should be remarked, are not to be visited by these officers. In some cases of actual failure to pay the required number of visits satisfactory explanations were called for and obtained from the officers concerned. One hundred and twenty-three outlying dispensaries were inspected four times and upwards in 1908, 128 in 1909 and 162 in 1910. In the last named year 92 dispensaries were visited three times, 67 twice and 21 once."

II.—PUNJAB HOSPITALS

THIS triennial report is submitted by Colonel C J Bambei, I M S, who took charge as Inspector General of Hospitals, Punjab on 12th May 1911.

The following extracts are of special interest—

"THE Quinine distributing agency attached to my office has proved a boon and has done a deal of good work. It has more than come up to expectations. From the quantity of quinine distributed in spite of the fact that there was no epidemic of malaria during the year, it is evident the use of the drug as a prophylactic has come to be recognized to a great extent. It is also satisfactory to note the energy with which district officers in several districts have helped to make the value of quinine more widespread by establishing quinine societies, and Mr C M King lately Deputy Commissioner of Gujraspur is entitled to great credit for being the first to start such societies. Under the orders of the Government of India, a series of properly controlled clinical tests are being carried out in the Mayo and Albert Victor Hospitals, Lahore, and in the jails in Lahore as to the comparative efficacy of sulphate and hydrochloride of quinine and also their relative keeping properties, especially during the rainy season."

Another noteworthy fact is the introduction during the year of the system in force in the Bombay Presidency of charging those patients who are able to pay fees for medicines and consultation. More than one civil surgeon puts this down as one of the reasons for decreased attendance at hospitals and dispensaries but most, if not all, district officers disagree in this view. I certainly do not hold with those civil surgeons who attribute the decrease in attendance mainly to this cause. As pointed out by Mr Burton, Deputy Commissioner of Attcock, it is no great loss to a charitable dispensary, if well to do persons who are unwilling to pay small fees for the medicines and services they can obtain at the dispensary, cease to attend."

"The Punjab Medical Library established by my predecessor, Colonel Bute, is growing more popular daily judging from the numerous demands for books from both commissioned medical officers and assistant surgeons. The provincial grant towards the maintenance of the library was increased during the year to Rs 1,000 as a permanent arrangement with a view to its being thrown open to sub-assistant surgeons and I am confident that these medical subordinates will benefit much by this concession. The thanks of the whole Punjab Medical Department are due to Colonel Bute for the establishment of this excellent library."

"The plans drawn up by the hospital standard plans committee were published early in the year, and will undoubtedly help to improve the internal arrangements and architecture of the hospitals in the province."

"A manual of rules and regulations concerning the department was a much felt want and this has now been supplied. The compilation of the manual was entrusted to Major R Head, I M S, and Captain C A Gill, I M S, who are entitled to much credit for their labour, as it was no easy matter getting together the various orders."

"Many of the canal dispensaries are not so well housed as they might be, nor, I think, are the sub-assistant surgeons in charge sufficiently remunerated for the large amount of travelling they have to do in their respective charges, they are moreover, badly equipped for travelling and are expected to do without menial assistance. In the matter of equipment, however, the provision of portable medicine pouches of a suitable design is under consideration, and a sample pack has been designed by the Medical Store keeper to Government, Lahore Cantonment, for the approval of the canal authorities."

We quote in full Col. Bambei's remarks on surgery in the Punjab. These remarkable figures are after all only a repetition of what we are now accustomed to in the Punjab, nevertheless they are a magnificent record.

"The total number of operations performed, including as it does all kinds, from the very trivial to the most important, may be considered a good test of the confidence of the people generally in Western methods of surgical treatment so the increase from a yearly average of 187,622 for the triennial period ending 1907 to 216,587 for that under report is most satisfactory. This contention is supported rather than otherwise by the fact that thousands of the increase are due to teeth extractions, an aching tooth skilfully removed may be the cause of as much gratitude, solid reputation and congratulation to the practitioner as a cataract operation."

The districts in 1910 showing a marked increase of over 1,000 are Amritsar with an additional 3,033, and Multan 1,016, while those shewing a corresponding decrease are Jullundur 2,620, Deor Ghazi Khan 1,517, Gujraspur 1,303, and Muzaffargarh 1,061.

The decrease at Jullundur is due to the great increase at Moga in the adjoining district. The decrease at Deor Ghazi Khan may be ascribed entirely to the unfortunate position of the Sadar hospital and town as regards the river.

If general operative work testifies to the efficiency of our work as a whole, the major or selected operation records are

more especially the measure, it may be said, of individual energy, skill and reputation. To obtain a place amongst the first few operators it is necessary that a reputation for surgical work should be provincial or even world wide. In all districts, though in some more than others, it is possible for a local reputation only to make a vast difference. In the last three years the hospitals at Moga and Amritsar have increased their record from 1,015, 2,063 to 2,736 and from 1,015, 1,005 to 2,020, respectively, while the similar figures for Lahore were 989, 1,101 and 1,332. The remaining important institutions show but little fluctuation in numbers excepting Ambala, Ferozepore, Jullundur and Gurdaspur, which have suffered materially, to a very great extent no doubt as a result of the increased reputation of their neighbours.

A marked feature of the records of the last two years of the triennial period under report is the increase in the number of operations performed for the relief of cataract. The figures for the previous triennium were 7,683, 8,010 and 7,577, and for the one under report they are 7,753, 10,650 and 10,929. About a quarter of the increase is due to a double operation performed simultaneously on the same patient, the remainder is most probably due to the reputation of the operators drawing patients from a wider area.

The percentage of good vision obtained by patients operated upon is represented by the figures 93.85, 93.53 and 93.69 for the three years respectively. These results are almost identical with those of the last triennial period. Unfortunately the returns are so continued that it is not possible to give percentages of cures on the actual number of operations performed. It is the case, however, that in dispensaries where fewest double operations are done, the percentages that can be obtained are nearest the truth though that does not imply necessarily that their results are better.

During the past year, Sub Assistant Surgeon Muthuia Das performed 2,487 operations for the relief of cataract at Moga, and Lieutenant Colonel H. Smith 1,478 at Amritsar. These two operators have easily maintained their pre-eminence in this special field of surgery for the whole of the last two triennial periods.

For the removal of stone from the bladder 6,308 operations were performed as against 6,782 in the previous triennial period. The figures for the six years compared one with another suggest that slight fluctuations from year to year are accidental, the records vary so little that it would seem almost right to conclude that nearly all persons suffering from stone in this province are operated upon.

Lithotomy was the operation chosen in 556 cases and the average percentage of deaths for the triennium was 10.93; it was 11.71 on 683 cases in the previous one. The operation known as Lithotomy, a combination of a perineal incision with crushing and removal was performed in 41 cases with only one death. Litholapaxy, crushing and removal of the stone at one sitting and without incision, was resorted to mainly, 5,761 cases were operated upon as against 5,989 in the previous triennial period, with an average percentage of deaths of 2.97 and 2.61 respectively. Although it is usual to lay special stress in India upon that part of surgical work connected with operations for the relief of cataract and stone it is doubtful if that would have been the case had abdominal surgery reached its present important position earlier. This branch of surgery demands the highest skill coupled with the most advanced knowledge and greatest care in detail, and it more than any other requires the most perfect after-treatment and nursing. In the past year there were 71 abdominal sections performed with 22 deaths, 41 operations for deceased appendix with three deaths, 161 for the radical cure of hernia with two deaths, 97 for abscess of the liver with 20 deaths and 19 for hydatid cyst of that organ with one death, and in four cases stones were removed from the kidney—all of which were successful.

For diseases peculiar to women many very important operations were performed, for instance, 27 ovariotomies with 5 deaths, 19 complete removals of the uterus with 3 deaths and in the domain of obstetrics, 18 Cesarean sections with 8 and 12 Perio's operations with 4 deaths.

In the male the prostate gland was removed in 33 cases with 18 complete recoveries and 8 deaths.

A criticism of the results of these operations would be impossible without a full knowledge of each case. It should, however, be remembered in reference to the mortality that many are undertaken for very advanced pathological conditions, and that the after-treatment is, in the case of Indians especially often attended by great difficulties.

As a proof of the excellent results obtained in general surgery, attention is called to the 15 amputations through the upper third of the thigh—8 after injury and 7 for disease—all of which did well.

For the first two years of the triennium the names of the officers who distinguished themselves by their surgical work have been mentioned in the reports already submitted. In the past year those who did the largest number of operations were—Lieutenant-Colonel H. Smith, 1,826, Major E. S. Peck, 932, Major H. Ainsworth, 703, Major E. V. Hugo,

who was absent on leave for 6 months during the year, 300. Amongst assistant surgeons Mu Diwan Ali, 804, Lala Si Ram, 641, Lala Baij Nath, 488, Lala Ram Lal, 252, Mir Muhammad Ismail, 252, and Lala Umrao Raja Lal, 233.

The excellent record of Sub Assistant Surgeon Muthuia Das of 2,711 operations has already been referred to. He occupies a unique position and one that might excite the envy of ophthalmic surgeons of any country. Other sub-assistant surgeons worthy of notice are Lala Ganga Ram with 311 operations, Lala Sun Ram, Lala Nand Lal, Lala Lachman Das, Syed Nawab Shah and Lala Balmukund.

We must make room for a few more Extracts.

"The object of the King Edward Memorial Fund is to build and equip, with the money collected by public subscriptions and an additional grant from Government, an up-to-date medical college and hospital. In the latter case this will be effected by extension of and additions to the present buildings, and when the scheme is carried to completion the Mayo Hospital with its associated departments will be able to take a high place among the other large hospitals in India. The proposals now before the Executive Committee of the fund comprise provision for an Indian hospital with accommodation for over 300 inpatients, and complete with modern operation theatres, clinical theatres, and special departments, and in equally efficient European hospital with more than twice the accommodation of the present buildings."

Both buildings will be fitted with the latest sanitary appliances, electric light, fans, lifts, etc., and a spacious new nurses' home, quarters for the resident staff and servants, and paying wards for Indian patients are also being arranged for."

"Of the diseases treated during 1910, those of affections of the eye again head the list with a total of 770,092, representing an average annual increase over the figures for 1905 of 46,938. This increase is probably due to the growing popularity of the dispensaries. Owing to the dust which pervades the atmosphere in most Punjab villages containing impurities of one kind and another, to the conditions under which the people live and to the swarms of flies which spread the disease, ophthalmia is very prevalent."

"The falling off in the figures for 1909 and 1910 under the head "Malarial fevers" is due to the comparative dryness of the two seasons, to the work done by the special plague staff and vaccinators by which agencies patients were treated at their own homes, and to the wider distribution of quinine in piece packets through village post and school master, &c., &c.

III.—BURMA HOSPITALS

THE year 1910 will always be memorable in the history of Western Medicine in Burma since it witnessed the opening of the new civil General Hospital in Rangoon, one of the finest hospitals in the East, an account of which we give in a recent issue.

We note that the scheme for a new Pasteur Institute has not yet advanced and the Government seems to think it may yet not be needed. If this means that it is now possible to treat cases of rabies infection without going to an Institute it may be true but the Province of Burma needs a Special Research Institute or Laboratory and we hope that such will soon be established. The good work done by the existing Laboratory is referred to below.

Colonel H. Caruthers submits the triennial report—and we quote the following extracts from his interesting report—

"The number of hospitals and dispensaries continues to be small in proportion to the area and population of the Province. Much progress has not been made in this direction during the last five years as almost all the available funds allotted under 24 Medical, in the Public Works Department Provincial Budget had to be appropriated for completing works in the construction of the New General Hospital at Rangoon, consequently during the triennium under review the rest of the Province has had no new hospitals and dispensaries given it from Provincial revenues, and for some years Burma will not be able to make any approach to a more adequate number of charitable medical institutions fairly distributed, as such projects as the new Lunatic Asylum, a new Contagious Diseases Hospital for Rangoon, and a Laboratory for the Chemical Examiner and Bacteriologist, which together involve an expenditure of nearly fifteen lakhs, claim prior attention.

Efforts are however being made to establish hospitals and dispensaries from local funds specially in Lower Burma. The difficulty experienced in obtaining Sub Assistant Surgeons has also continued to contribute hindrances to the free opening of the medical institutions in the Province.

After some delay, it has been found possible to remodel the type designs for hospitals and dispensaries so as more nearly to suit modern requirements."

"Rangoon General Hospital.—The ward accommodation provided was almost the same during each year of the triennium, viz., 391 beds. During the year the patients were gradually removed from the old to the New Hospital, which is in process of being finished. These extensive changes

caused some slight dislocation of hospital routine, and it was found necessary to temporarily close some wards for short periods, though not usually for more than a week or ten days. Consequently the in-door patients show a decrease of 186, while there was an increase of 930 out-door patients. A gratifying feature is the large increase in the number of women and female children treated. The total figures under this heading have risen from 8,822 in 1908 to 14,586 in 1910. The increase is most marked amongst the women the figures having risen from 6,900 in 1908 to 11,733 in 1910. This increase is chiefly due to European and Eurasian and Burmese women, the figures having increased by 782 and 1,160, respectively. The larger attendance may be attributed to the greater attention given to Gynaecology by the institution of a special out-patient department and the reserving of a special ward for cases of this nature. Major Barry, I.M.S., the Superintendent of the General Hospital, Rangoon, points out that the statement generally made by the outside public that women, the Burmese in particular, are afraid to go to the Rangoon General Hospital and are not given encouragement to do so, is refuted by the figures which speak for themselves.

The following extracts are of interest—

"Appendicitis"—This is a new heading, and is interesting, inasmuch as some authorities have expressed doubt as to the liability of Indians and Burmese to the complaint. Out of 41 cases treated at the General Hospital, Rangoon, 15 occurred among European patients and 29 among Natives. In practically every case the diagnosis was confirmed by operation.

Tubercles of the Lungs—This is again shown this year under a separate heading and a comparison of the figures with those of previous years is difficult owing to admissions for this disease in previous years being included under the general heading "Respiratory diseases." The damp moist climate of Lower Burma is particularly favourable to tubercular affections of the lung. Tubercular diseases are also reported to be very common in Mandalay. One hundred and twenty two cases were treated in that Hospital as compared with 77 in 1909. Of the 122, 61 were treated in door. The subject of tubercle was discussed at a meeting of the Local Branch of the British Medical Association in 1909. A sanatorium is an urgent necessity.

The mortality and inefficiency resulting from malaria, syphilis and tuberculosis is very marked in this Province, and its statistics should be closely watched.

The steady increase in Surgery is very satisfactory—

The total number of surgical operations performed during the year 1910 was 10,470 against 8,670 in 1909 and 8,076 in 1908. As compared with the number of operations performed in 1907, there was an increase of 13,264 in 1910, or an increase of nearly 50 per cent in a period of three years. The death rate among the patients operated upon was 6.2 per cent against 6.6 per cent in 1909, and 6.9 per cent in 1908, and the rate per cent of the triennium was 6.5 against 6.1 in 1905–07.

There has been a marked yearly increase during the triennium in the number of major operations performed in the various institutions as shown below as compared with the figures of the previous triennium—

Nature of Operations	1908	1909	1910	Total 1905–07
Amputations	191	227	238	469
Decompression of skull	81	78	111	104
Hepatotomy	117	112	111	151
Ovarian extraction	71	113	101	121
Radectomy	27	54	102	65
Excision of eye ball	27	19	16	66
Herniotomy	116	137	155	208
Abscess of liver	43	21	17	51
Lithotomy	36	32	10	66
Lithotripsy	10	15	5	31
Litholapaxy	26	19	16	55
Oophorectomy	1	2	8	10
Ovariectomy	12	12	17	19
Hysterectomy	8	13	21	22
Excision of vermiform appendix	11	34	31	37

During the triennium under review most of the Head quarter hospitals in the Province were equipped with instruments and appliances in accordance with modern demands of septicism, and surgical work during the triennium has made a definite advance. Good surgical work with reduced death rates has been attained from most places especially from Rangoon, Maymyo, Hengzidai, Monywa, Prome, Akyab, Mindatay and Bassein, where suitable and up to date operating rooms have been provided.

In Rangoon 727 more operations were performed than in 1909. One of the most important increases was under operations of the female genito-urinary organs. 151 such operations

were performed in 1910 or 106 more than in the preceding year, of these operations 75 necessitated abdominal section. Two hundred and seventy abdominal operations were performed with a death rate of 16 per cent. Major Barry attributes this high percentage of death rate to the fact that amongst these abdominal operations there were cases of advanced intestinal obstruction, of murderous assaults, and exploratory incisions which not infrequently revealed disease so advanced as to be necessarily fatal. Under operations on the eye, there is again an increase of 35 operations due chiefly to the growing success of the Eye department under the Ophthalmic Surgeon. In Maymyo, however, consequent on the several changes in the Civil Surgeoncy subsequent to the transfer of Lt Colonel Duer, the surgical work at the Civil Hospital has somewhat suffered. The number of operations performed during the year 1910 was only 578 against 1,335 in 1909.

Laboratory—During the year steady and satisfactory progress in work has been made at the Laboratory attached to the General Hospital, Rangoon. Wassermann's reaction for syphilis has been regularly carried out, and after some experience it is found that the results obtained are accepted by Clinicians with confidence, as a very valuable guide in obscure and difficult cases. The two most important advances made during the year consist in the regular bacteriological investigations which are now undertaken, and in the careful carrying out and recording of post mortem examinations. Immediate results from such advances are not likely to receive but one event of considerable importance in the management of the public health at Rangoon is directly due to the attempt now made to arrive at more accurate bacteriological diagnosis viz., the detection of a certain number of undoubted cases of glanders among men living in close contact with gauri ponies. Bacteriological work has also been of great importance to the work in both Medical and Surgical wards. A much larger amount of microscopic work has been done in connection with post mortem cases than in any previous year. As an instance of the possibilities of this branch of work in connection with this hospital, it is only necessary to mention the fact that during the year no less than 675 post mortem examinations have been held.

Correspondence

RURAL SANITATION

II

To the Editor of "THE INDIAN MEDICAL GAZETTE"

Sir,—My first letter on this subject appeared in the March number of the Gazette, to determine the real point at issue I should be more clear and definite and for this I would beg your permission to occupy a space in your valuable journal.

I have in my observation practically held my countrymen responsible for the existing deplorable condition of the villages, which is incongruous with the movement they have of late started so zealously, and their incentive eloquent utterances in public places after the name of the "Country" and the "people". No one doubts their unshaken feelings and sincere desires. But the people *en masse* want something more, e.g.—earnest and honest workers, and truly constructive work based upon sound organisation without which no efforts or enterprises can succeed. To cope with the rural insurrection we must have them first before we proceed to profess the idea of "National awakening". Peoples health is the nation's health, we must expunge from our Agenda all unical fictions that, in my humble opinion, are really time killers.

Let me, for a moment, turn back to the usages of old days. *Manu* was a great Hindu law maker, Hindu Society was guided by his principles. Sanitary regulations were carefully embodied in his treatise. They were all right in their own way, and in his time they were adaptable for this country. But the wind now blows from a different direction, and the modern life must incorporate with the modern approved laws and modern light without which no country can flourish. India passed through dark days when there was no progress of sanitary science as a result, the people forgot *Manu's* teachings and horrid warnings and several prejudicial customs and superstitious beliefs were introduced into the Hindu Society,—so in case of other Indian communities.

Then followed a stage when the wealthy section volunteered to contribute their aid for the relief of the poor, which action they considered was allied to "Dharma". Thus big tanks (*Dighis*) and deep wells were dug, some of them still exist here and there in a most unserviceable condition. Besides they did several small works for the welfare of the people and the country in which they lived,

which directly or indirectly concerned public health and contributed to the general sanitary improvement in an abrupt and unscientific manner. Now the tendency of the wealthy section of our community is diverted, not for want of money, but for want of insight and the same spirit which predominated before. Now there is amongst us a section which is called "Educated community" who professes to be representatives of the people in general and the inarticulate mass especially.

Thus we have got in our midst men of money and education and it is really sad to think that in spite of this, the rural population is permitted to witness the dreadful epidemics, and fight their fate in the hot beds of malaria and preventable scourges.

The wealthy persons and the educated community or others of moderate means may have their abodes, permanent or temporary, in healthy towns or the metropolis, and enjoy the advantages which the latter give, and escape the attacks of malaria and other maladies after deserting the villages—their ancestral homes. But if they once fail to think for a while how their luxuries may be supplied if the poor jots of peasants are left alone to settle their destinies themselves and their physique becomes shattered, and the cruel dagger of Death takes away a good many of them every year.

As stated in my previous correspondence, the authorities are not sitting idly with closed eyes. There is a Civil Surgeon—a highly qualified and sympathetic officer over the district, fully equipped with a few Assistant Surgeons and Sub Assistant Surgeons and a special vaccination staff to afford medical and sanitary aid to the suffering mass. But the needs of the people are so numerous, and any programme to improve rural sanitation on a large scale is so expensive, that public help and public co-operation is essentially necessary. This will strengthen the hands of the Government and its officers will be considerably encouraged. To combat the malaria a host of Sub Assistant Surgeons are employed every year at considerable expense to extend medical aid to every door, and they are scattered over afflicted areas.

This is an experimental stage, and therefore it is not safe to form any opinion at present, but my humble suggestion is that the Government is doing its duty for its subjects as efficiently as possible. Now a man in the street may ask if it is enough for us to find fault with the action of the authorities and finish our responsibility by shouting and clamouring in the Congress and Conferences once a year, and by merely passing a few resolutions etc. sanitation and sanitary measures. I shall, however, be glad to know if any of your esteemed readers are good enough to bring to my notice a single instance where the resolutions have ever been carried into effect.

I would, therefore, in the name of my country and my poor fellow countrymen for whom my heart bleeds, earnestly appeal to the wealthy and educated community who are gifted with the resources which are primarily necessary to improve the situation. I hope my appeal will not go in vain.

I am not a competent man to suggest any definite scheme that may be acceptable to all parties in order to start the business. But my contention will remain inconclusive unless an outline is given.

The suggestions are as follows—

1. There is no harm to build a house or a number of houses in towns, if anyone so wishes or his funds permit, but it is extremely objectionable that he should desert his ancestral home and remove to a town for ever. Wealthy and educated men are the beauty and strength of a village, and without them the villages are converted into Goldsmith's deserted village. A flower garden without flowers has no fascination—rather distressing. So an eye without the sense of vision or an ear without the sense of hearing. They are the real ornaments and they must keep concern with their village abodes.

2. Associations after the name of the "People's Sanitary Association" should be started all over the districts. The Central Association should be at the head quarters station of the district, and the Civil Surgeon should generally be the president. The Branch Association should act under the instructions of the Central Association. All classes should have admission into the Association.

3. The Associations should collect subscriptions at the minimum rate from men of all means and all classes, and the fund thus raised should be named "People's Sanitary Fund."

4. The Associations should send capable missionaries to villages in order to educate the public mind. The illiterate and ignorant people require to be first convinced of the efficacy of sanitary measures which are intended for them. Then co-operation and sacrifice will be forthcoming from the mass, otherwise the object of the Associations will prove infinituous. I know an instance when a Sonthal rushed forth with a knife to kill a vaccinator who approached to vaccinate the Sonthal's child. We are to deal with ignorant and unlettered people mostly, whose minds are saturated with prejudicial ideas. Another instance I should put before you readers. Once I was placed under cholera duty in the

district of Champurun. I had some cholera pills with me. The people were not inclined to use those pills which they considered were made of poison to kill them. With great difficulty I had, however, persuaded them to use those pills, but I had to swallow one pill in their presence to make them believe that it was not poisonous. To disinfect a well with permanganate of potash a similar incidence had occurred. This is why I value "educating the public mind" from the outset.

5. The funds collected should thus be utilised—

- (a) Digging new tanks and wells
- (b) The excavating and clearing old tanks and wells
- (c) Making good arrangement for drainage
- (d) Constructing and improving village roads and paths
- (e) Cleaning jungles
- (f) Closing up water logged places
- (g) Making suitable conservancy arrangement where necessary
- (h) Providing measures to cope with the epidemics and afford immediate relief

6. The Association should instruct people to construct houses on high ground to facilitate natural drainage and avoid dampness.

7. Only picked active and honest men should be enrolled as members and Sanitary Missionaries. The Associations should always try to be above suspicion and they must inspire confidence in the minds of the people and the Authorities.

I must conclude my letter by saying a word more. I was at one time in charge of a charitable dispensary at Mymensingh. The dispensary was maintained by a Hindu zamindar, but it was really speaking, an institution maintained by the zamindar's jots who used to pay three pies more in addition to the actual rent for each rupee per annum, and thus the amount collected was enough to maintain two well equipped dispensaries which still exist. Neither party was inconvenienced. There was absolutely no grumbling and no hardship, and the business went on smoothly. I am unable to estimate the boon the two dispensaries were conferring to the suffering people. I am not aware if this suggestion may be agreeable to your leaders or acceptable to all parties. But I am sufficiently convinced that if the similar practice is adopted by all big men of wealth, we may have at once a large number of dispensaries in our midst. Of course, it must be understood that this process is only admissible in cases where the wealthy men are incapable of starting charitable dispensaries independently.

In big towns and cities the people know how to take care of themselves. It is for the benefit of the rural population, in absorbing whole heated sympathy and organised concerted action of all classes (especially wealthy and educated classes) we chiefly needed.

I should be excused for the lengthiness of my letter. It is a subject of vital importance. It is hoped that all medical men should take up the question to ameliorate the suffering of the village people.

I remain,
Sir,

Your most obedient servant
BARRACKPUR, }
SATKORI GANGULY
SUI ASSISTANT SURGEON,
The 30th August 1911 }
E B S Ry

KEROSENE AGAINST BED BUGS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—With reference to the article "Bed Bugs and how to destroy them by Kerosene Oil," which appeared on the correspondence page of the August number of the Journal, I beg to ask you favour to give a place in your journal to the following trial with Kerosene Oil on Bed Bugs in my Hospital.

In our hospital here several of the rope knitted beds (charpoys) were infested with bed bugs. One day I took one of them out in the open, and got half a sack of kerosene oil from the shop, and on all sides every corner, every hole every rope was nebulously soaked with the oil. When the oiling was finished, then I took a bamboo stick and with it thoroughly thrashed the charpoi. But to my disgust I saw scores of the bugs, from small ones to full grown adults, fall on the ground and were running hither and thither.

I find that they did not die in the oil but were drowned as if in water.

A much better preparation is soap suds and oil of turpentine in equal parts made into an emulsion, this never fails to destroy them at once.

Yours, &c.,
MARIANI P. O., }
TAFAZOOL HOOSAIN,
ASSAM, } NATIVE DOCTOR,
29th August 1911 } Hoolungomie Hospital

THERAPEUTIC NOTICES

MESSRS D J KLEINER & COMPANY, 3 Whitefriars St, London E C have put on the market COLALIN, an amorphous active principle of bile. Bile is well known as an old fashioned remedy and purified ox bile exists in many Pharmacopoeias. COLALIN is an elegant preparation in grain tablets. Dose for adults one tablet thrice daily. It is recommended in hepatic congestion and in the constipation of Bright's Disease.

Messrs Newton Chamber & Co send us notes on the value of a solution of IZAL in glycerine and water in the treatment of *tinea favosa capitis*, taken from cases treated by Sir Dyce Duckworth at St Bartholomew's Hospital.

Messrs Newton & Co, 3 Fleet St, London E C, send us a very complete Illustrated Catalogue of the latest X Ray and ELECTRO MEDICAL APPARATUS. This firm has just supplied thirty installations of X Ray apparatus to the Royal Navy. This Catalogue is commended to the notice of Civil Surgeons and heads of Hospitals.

Service Notes

The following useful circular has recently been issued by the Inspector General of Civil Hospitals, Bengal —

"THERE are no definite rules prescribing the scale of fees payable to Government medical officers for attendance on the families of Government servants. The only order on the subject is given in Government of India, Home Department letter No 551, dated the 26th October 1886, to the address of the Surgeon General with the Government of India, a copy of which was circulated with this office Circular No 7 of 25th February 1887. In this it is stated that to avoid a misunderstanding between the patient and the medical officer it would be better if an arrangement were made regarding fees, etc., at the time when the latter was first called in. In the absence of a special arrangement on the basis of a yearly payment it would be fair to assume that the medical officer's professional services would be paid for by the visit. This obviously also should form part of the arrangement referred to above."

As lately there have been instances in which disagreement has taken place between medical officers and officers of other departments, who have engaged the services of the former, I have the honour to request that in future the procedure suggested in Home Department letter quoted above, should be followed, bearing in mind that in all cases of emergency medical attendance must be afforded *at once*, any stipulations about fees, etc., being made subsequently, that is, after the emergency had been attended to. With regard to attendance on military officers and their families, etc please read paragraph 67, volume VI, Army Regulations, India."

LIEUTENANT COLONEL S E Piall, M B, B S (London), I M S, is granted, from the date of relief, such privilege leave of absence as may be due to him on that date.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments during the absence on leave of Lieutenant-Colonel S E Piall, M B, B S (London), I M S or pending further orders —

Major A F W King F R C S (E), I M S, to act as Health Officer of the Port and Medical Officer, European General Hospital, Aden, and Civil Administrative Medical Officer, Aden.

Captain K G Ghorpurey, I M S, to act as 2nd class Civil Surgeon, Aden.

CAPTAIN A F HAMILTON, M B, I M S, held charge of the Office of Deputy Sanitary Commissioner, Central Registration District, from the 28th April to 1st June 1911, in addition to his own duties.

MAJOR E C G MADDOCK, M B, I M S, has been allowed by His Majesty's Secretary of State for India an extension of furlough on medical certificate for six weeks.

MAJOR E C G MADDOCK, M B, I M S, has been allowed by His Majesty's Secretary of State for India to return to duty.

CAPTAIN A E GRISWOOD, I M S, Plague Medical Officer, Delhi, got 42 days' leave from 25th May.

CAPTAIN J E CLEMENTS, I M S, Civil Surgeon and Superintendent, Central Jail, Punjab, has been permitted by His Majesty's Secretary of State for India to convert the period from 11th October 1910 to 17th March 1911 of the combined leave granted to him in Notification No 126, dated 22nd April 1910, and subsequently extended in Notification No 185, dated 8th May 1911, into study leave.

MIR DIWAN ALI made over charge of the duties of the Superintendent of the Jullundur District Jail to Captain H C Keates I M S, on the forenoon of the 9th June 1911.

CAPTAIN R T WELLS, I M S, took over charge of Dera Ghazi Khan Jail on 8th June 1911.

CAPTAIN J G G SWAN, I M S, Officiating Civil Surgeon, Punjab, has been permitted by His Majesty's Secretary of State for India to convert the period from 1st February to 30th April 1911 of the furlough granted to him in Notification No 842, dated 4th November 1909, into study leave.

CAPTAIN H C KEATES, I M S, is appointed Civil Surgeon, Jullundur.

CAPTAIN W T FINLAYSON, I M S, Superintendent of the Lahore District and Female Jails, waived himself of the privilege leave granted to him in Punjab Government Notification No 179 dated 4th May 1911, on the forenoon of the 18th May 1911, making over charge of his duties to Major E L Ward, I M S, Superintendent, Central Jail, Lahore. Captain Finlayson resumed charge of his duties on the forenoon of the 18th June 1911, relieving Major Ward.

THE leave granted to Captain A Cameron, I M S, Plague Medical Officer, Delhi, in Notification No 436, dated the 10th May 1911, is hereby cancelled.

THE services of Captain E J C McDonald, I M S, are placed at the disposal of the Government of India, Department of Education, with effect from the afternoon of the 10th June 1911, on which date he relinquished charge of his duties as Plague Medical Officer, Gurgaon.

CAPTAIN H HALLIDAY, I M S, got one month's privilege leave with effect from 30th May 1911.

CAPTAIN P S MILLS, M B, I M S, whose services have been placed temporarily at the disposal of the Punjab Government, was posted to Delhi, where he assumed charge of his duties as Plague Medical Officer on the forenoon of the 7th June 1911, relieving Captain H C Keates, I M S, transferred to civil duty.

ON return from leave granted to him in Punjab Government Gazette Notification No 455, dated the 15th May 1911, Captain N S Sodhi, I M S, resumed charge of his duties as Plague Medical Officer, Gurgaon, on the forenoon of the 18th June 1911.

ON return from leave Captain A F Babuall, I M S, has been transferred from Umballa to Gurgaon, as Plague Medical Officer.

CAPTAIN W FORESTER, I S M D, is transferred as Civil Surgeon, Kangra, and Senior Assistant Surgeon Inayatullah Nasir has gone to Gujarat as Civil Surgeon.

PRIVILEGE leave for one month, under Article 260 of the Civil Service Regulations, is granted to Major P F Chapman, M B, C M, I M S, Civil Surgeon, Jubbulpore, with effect from the date on which he may avail himself of it.

CAPTAIN W J POWELL, M B, D P H, I M S, Officiating Superintendent, Central Jail, Jubbulpore, is appointed to officiate as Civil Surgeon, Jubbulpore, in addition to his own duties, during the absence on leave of Major P F Chapman, M B, C M, I M S, on leave, or until further orders.

CAPTAIN D N ANDERSON, M B, I M S, Officiating Civil Surgeon, has been granted, by His Majesty's Secretary of State for India, leave on medical certificate for four months in extension of the furlough on medical certificate granted him by Orders No 2322, dated the 30th September 1910, and No 55, dated the 7th January 1911.

THE services of 3rd Class Assistant-Surgeon Colin Hope Mason, I S M D, are placed temporarily at the disposal of the Government of the Central Provinces with effect from the 27th May 1911.

CAPTAIN W TARP, M D FRCSE, I M S, Officiating Civil Surgeon, whose services have been placed permanently at the disposal of the C P by the Government of India, Home Department's Notification No 817, dated the 11th July 1911, is appointed to be a Civil Surgeon of the

2nd Class, with effect from the 30th April 1911, vice Major P F Chapman, M.B., C.M., I.M.S., Civil Surgeon, 2nd Class, promoted to the 1st Class.

In Order No 475, dated the 13th March 1911, deputing Captain J M A MacMillan, M.B., I.R.C.S., I.M.S., Civil Surgeon, Hoshangabad, on special duty at Pachmarhi, for "the 7th July 1911," read "the 10th July 1911."

CAPTAIN J M A MacMillan, M.B., I.R.C.S., I.M.S., on special duty at Pachmarhi, is reposted as Civil Surgeon, Hoshangabad District.

With reference to General Department Notification No 33, dated the 23rd January 1911, Major T Stodut, I.M.S., Civil Surgeon, Mogok, is appointed as first class Civil Surgeon, sub *pro tem* with effect from the 11th June 1911, before noon, in place of Major E R Rost, I.M.S., reverted

MAJOR E R ROST, I.M.S., Officiating Senior Civil Surgeon, Rangoon, is appointed to officiate as a First Class Civil Surgeon, with effect from the 11th June 1911, before noon.

MAJOR P DEE, I.M.S., Officiating First Class Civil Surgeon, reverts to his substantive grade, with effect from the 11th June 1911, before noon.

MAJOR C E WILLIAMS, I.M.S., has been granted by His Majesty's Secretary of State for India an extension of furlough for three months.

With reference to Rule 3 of the rules contained in General Department Notification No 301, dated the 7th August 1908, Captain H B Scott, I.M.S., Special Plague Medical Officer, Sagoing Division, is invested by the Local Government with all the powers conferred on the Deputy Commissioner by the above mentioned rules.

THE following postings are ordered in the Civil Medical Department, Burma:

Second Class Military Assistant Surgeon E A Picachy to be Civil Surgeon, Myitkyina, in place of Senior Military Assistant Surgeon and Honorary Lieutenant R McKie.

Under the provisions of Articles 260, 316 and 233, of the Civil Service Regulations, privilege leave to the extent due combined with special leave on urgent private affairs so as to make up a total period of six months, is granted to Major M Dick, I.M.S., Civil Surgeon, Myingyan, with effect from the date on which he is relieved by Lieutenant Colonel R H Castor, I.M.S.

Lieutenant Colonel R H Castor, I.M.S., is transferred from Shwebo and is appointed to be Civil Surgeon, Myingyan, in place of Major M Dick, I.M.S., proceeding on leave.

Captain H H Norman, R.A.M.C., is appointed, as a temporary measure to hold collateral charge of the Civil Surgeoncy at Shwebo in place of Lieutenant Colonel R H Castor, I.M.S., transferred.

With reference to Rule 3 of the rules contained in General Department Notification No 301 dated the 7th August 1908, Captain W F Bryne, I.M.S., Special Plague Medical Officer, Pegu Division, is invested by the Local Government with the powers conferred on the Deputy Commissioner by Rules 7, 8, 9, 10, 11, 12, 14, 18, 26, 34, 35, 42 and 45 of those rules.

The services of Lieutenant Colonel H Thomson, Sanitary Commissioner Madras, are placed at the disposal of the Government of India to act as P M O at Bangalore.

LIEUTENANT COLONEL R ROBERTSON, I.M.S., acts as Principal, Medical College, Madras.

LIEUTENANT COLONEL F C PFIRFIRA, I.M.S., got one month's privilege leave in June.

MAJOR C DONOVAN, I.M.S., was due out on 1st August.

MAJOR T E WATSON, I.M.S., is due from long leave on 2nd December 1911.

MAJOR H KIRKPATRICK, I.M.S., acts as Superintendent, Government Ophthalmic Hospital, Madras, till return of Major Elliot, in November.

CAPTAIN E W BROWNE, I.M.S., General Hospital, Madras, has been granted 15 months' combined and study leave from 18th July.

CAPTAIN M J QUIRE, I.M.S., has gone to Madras as Professor of Materia Medica.

CAPTAIN W O GRAY, I.M.S., was posted to Madras to act as Secretary to Principal, Medical College, and as Professor of Biology.

CAPTAIN F W CRAGG, I.M.S., acts as Assistant Director, King Institute, Guindy.

LIEUTENANT COLONEL B OLDHAM, I.M.S., Civil Surgeon 24 Peignanas, has gone on leave with medical certificate and Major R H Maddox, I.M.S., comes out from home to act pending Major Maddox's arrival. Captain Emslie Smith, I.M.S., is acting as Civil Surgeon, Alipore.

CAPTAIN H HALLILAY, I.M.S., got leave with effect from 30th May and Military Assistant Surgeon E Phillips acted as Civil Surgeon of Lyallpore.

LIEUTENANT COLONEL H SMITH, I.M.S., got 2 months and 30 days' privilege leave with effect from 21st June 1911.

RAJ SAHIB PANDIT ATTAR CHAND acts as Civil Surgeon of Jullundur during the absence of Lieutenant Colonel H Smith on leave.

CAPTAIN D H F COWIN, I.M.S., Civil Surgeon, Shrihpuri, got one month's leave on 1st July 1911.

CAPTAIN A E GRISWOOD, I.M.S., is posted to Delhi as Plague Medical Officer on return from leave.

CAPTAIN N H HUMF, I.M.S., Superintendent, Central Jail, Montgomery, has gone on 2 months and 23 days' leave, and Military Assistant Surgeon Cox officiates in charge of the Central Jail.

On return from privilege leave Major V H Roberts, I.M.S., is posted as Plague Medical Officer, Rohtak.

The date of Lieutenant Colonel J L Van Geyzel's retirement is given as 9th July 1911.

LIEUTENANT COLONEL H THOMSON, I.M.S., Sanitary Commissioner, Madras, acts as P M O, Bangalore.

MAJOR R H ELLIOT, I.M.S., is due out from furlough on 7th November 1911.

MAJOR T E WATSON, I.M.S., is due out from furlough on 2nd December 1911.

CAPTAIN E W BROWNE, I.M.S., has been granted leave for 15 months, till 17th October 1912.

CAPTAIN W A JUSTICE, I.M.S., acts as Sanitary Commissioner, Madras.

CAPTAIN E A ROBERTS, I.M.S., return to Madras 17th October 1911.

LIEUTENANT COLONEL C F FEARNSIDE, I.M.S., is posted to Trichinopoly as Superintendent of the Central Jail.

MILITARY ASSISTANT SURGEON R T RODGERS has been deputed to Buxai Central Jail to learn the methods of getting rid of dysentery by Foester's Vaccine, which has been so successful in the hands of Captain W Gillett, I.M.S., the Superintendent.

On return from leave Military Assistant Surgeon W W Stewart, L.R.C.P., is posted as Assistant to the Civil Surgeon, Jubbulpore.

MAJOR H A J GIDNEY, I.M.S., was on study leave from 23rd February till 1st July 1911.

With reference to Rule 3 of the rules contained in General Department Notification No 301, dated the 7th August 1908, the following Military Assistant Surgeons who are employed as Assistant Plague Medical Officers in the Pegu Division, are invested by the Local Government with the powers conferred on the Deputy Commissioner by Rules 7 and 12 of those rules:

(1) First Class Military Assistant Surgeon G P O'Brien
(2) Second Class Military Assistant Surgeon C W Rebeiro

(3) Second Class Military Assistant-Surgeon A C Perera
(4) Third Class Military Assistant Surgeon P A Scanlon
(5) Third Class Military Assistant Surgeon H H Lyndale

MAJOR N P O'GORMAN LALOR, I.M.S., has passed the Lower Standard Examination in the Burmese language.

CAPTAIN W F BRAYNE, I.M.S., recently got 51 days' privilege leave.

LIEUTENANT COLONEL R H CASTOR, I.M.S., took over the executive and medical charge of the Myingyan Central Jail on 23rd June.

LIEUTENANT COLONEL A W T BUST, I M S, made over charge of the duties of Superintendent of the Ambala District Jail to Pandit Hrithagwan Dass, Senior Assistant Surgeon, on the forenoon of the 7th August 1911.

DR MUHAMMAD SHARIF made over charge of the duties of the Superintendent of the Shahpur District Jail to Major D H F Cowin, I M S on the forenoon of the 2nd August 1911.

CAPTAIN H HALLIAY, I M S, is posted, on return of leave, to Lyallpur as Civil Surgeon.

ON return of Lieutenant Colonel A Nott, I M S, from furlough, Major A Gwyther, F R C S (Ed), Civil Surgeon of Howrah, takes furlough.

WE regret to record the death in Calcutta of Surgeon Lieutenant Colonel K P Gupta, I M S (retired). Lieutenant Colonel Gupta took the M A Degree in Calcutta with honours in 1866, and his medical diplomas (L R C P, L R O S) in Edinburgh in 1868. He attained the rank Surgeon Lieutenant Colonel in 1896. He was Deputy Sanitary Commissioner in Bengal for many years, and retired in June 1898.

CAPTAIN I M MACRAE, I M S, Superintendent of the Central Prison at Lucknow, is granted privilege leave for one month, with effect from the 10th August 1911, or subsequent date.

MR P W MARSH, I C S to hold executive charge of Lucknow Central Prison in addition to his own duties during the absence on privilege leave of Captain I M Macrae, I M S, and Captain C A Spurway, I M S, to hold medical charge of the Lucknow Central Prison in addition to his own duties, during the absence on privilege leave of Captain I M Macrae, I M S.

CAPTAIN H R NUTT, I M S, Officiating Civil Surgeon, Azamgarh, privilege leave for one month with effect from the 1st September 1911, or subsequent date.

MAJOR G HUTCHESON, I M S, Civil Surgeon, Aligarh, privilege leave for six weeks, with effect from the 15th August 1911, or subsequent date.

MAJOR J G HULBERT I M S, Civil Surgeon, Muttia, to hold visiting medical charge of Aligarh district, vice Major Hutcheson, Civil Surgeon, granted leave.

CIVIL ASSISTANT SURGEON MASHA ALLAH KHAN, attached to the Sadar Dispensary, Aligarh, to hold civil medical charge of the district in addition to his own duties, vice Major Hutcheson, granted leave.

LIEUTENANT COLONEL J M CRAWFORD, I M S, Civil Surgeon, Benares, to hold visiting medical charge of the Azamgarh district vice Captain Nutt, I M S, granted leave.

CIVIL ASSISTANT SURGEON GANPAT RAI, attached to the Sadar Dispensary, Azamgarh, to hold civil medical charge of the district, in addition to his own duties, vice Captain H R Nutt, I M S, granted leave.

MILITARY ASSISTANT SURGEON F W HORSES, I S M D, assistant to civil surgeon, Allahabad, to be civil surgeon, Sultanpur.

CAPTAIN L J M DEAS I M S, has passed the examination for the I R C S (Edin) while at home on study leave.

CAPTAIN F W SOMNER, I M S, was granted one month's privilege leave from 21st August 1911.

HIS EXCELLENCY THE GOVERNOR IN COUNCIL is pleased to appoint Captain J Smalley, M B, I M S to act as 2nd class Civil Surgeon, Ahmednagar, pending further orders.

LIEUTENANT COLONEL J G HOJEL M B, B Ch (DUB), I M S is granted privilege leave of absence for one month from the date of relief.

HIS EXCELLENCY THE GOVERNOR IN COUNCIL is pleased to appoint Lieutenant Colonel M A F Collier, M B (Aberd), I M S, to act as Surgeon, Gokuldas Teppal Native General Hospital, Bombay, in addition to his own duties during the absence on leave of Lieutenant Colonel J G Hojel, M B, B Ch (DUB) I M S, or pending further orders.

THE services of 4th class Assistant Surgeon B St C Honey, I S M D are placed at the disposal of the Director, Royal Indian Marine, with effect from the 13th July 1911.

THE services of 3rd class Assistant Surgeon C W D Dunlop, I S M D are placed at the disposal of the Director, Royal Indian Marine with effect from the 13th May 1911.

THE services of 4th class Assistant Surgeon J C Dyer, I S M D, are placed at the disposal of the Engineer in Chief Lower Ganges Bridge, Paksey (Purna), with effect from the 10th July 1911.

2ND class Assistant Surgeon W J P Martin, I S M D, is appointed to the Station Staff Dispensary, Simla, with effect from the 6th July 1911.

THE services of 3rd class Assistant Surgeon J G Johnstone I S M D, are placed at the disposal of the Director, Indo-European Telegraph Department, with effect from the 16th July 1911.

LIEUTENANT COLONEL J W RODGERS, I M S, retired from the service on 5th July 1911. He entered the service on 2nd April 1881, was put on the selected list on 10th April 1905 and has been on leave out of India since 5th February 1911. Lieutenant Colonel Rodgers spent his career in military employ and saw much field service, including Hazara Expedition of 1885, Relief of Chitral 1895, and East Africa (Somaliland). We understand that he got one of the extra or compensation pensions for 1911-12, Lieutenant-Colonel D G Crawford getting the other.

MAJOR J H HUGO, D S O, I M S, Agency Surgeon, Bundelkhand, was granted one month's privilege leave from 7th August and Capt T Crawford Boyd, I M S, acts for him in addition to his military duties.

WE understand that Captain C W F Melville, I M S, 9th Hodson's Horse, will be the senior medical officer in the coming Aboi Expedition.

CAPTAIN F H STEWART, I M S, will have charge of a field Hospital at the Base.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles Letters, and Books for Review should be addressed to THE EDITORS *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

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Annual Subscriptions to "The Indian Medical Gazette" Rs 12, including postage, in India Rs 14, including postage, abroad.

BOOKS, REPORTS, &c, RECEIVED —

Bengal Hospitals Report
Punjab Hospitals Report
Haemoglobinuria in Canal Zone by Deeks and James
J K Lors The Drift Child John Wright & Sons
Kerr's Operative Midwifery (2nd Ed) Baillière Tindall & Cox
Sargent and Russell's Emergencies of General Practice Price 15s (Oxford Med Publication)
Allbutt & Rolleston's System, Vol IV (Skin) Macmillan & Co
Quinquennium of Medicine and Surgery (1906-10) W Green & Sons
Indian Museum Report and Programme
Pasteur Institute Report (South India)
Dr C Bentley's Report on Malaria in Bombay
The Yellow Fever Bulletin
Vaccination Reports Bengal and Punjab
F Clarke's Refraction &c (3rd Ed) Baillière Tindall & Cox
Munro's Suggestive Therapeutics C V Mosley Co
Smith's What to Eat & Why W D Saunders & Co
South India B M A Album of Photographs John Bale Sons & Daniels, Ltd
I-Civil Veterinary Memoirs No 2 Thacker, Spink & Co
Hong Kong Medical and Sanitary Reports

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM.—

It Col D G Crawford, I M S London Secy, Royal College of Physicians London Mil Asst Surgt Bouche Aden Capt Deas, I M S London Capt G Fowler I M S Akola Capt K W Mackenzie, I M S Jhansi Lt Col Maynard, I M S Calcutta Major J W Megaw, I M S Calcutta Major James, I M S Simla Lt Col Adie I M S Lahore Major Christopher, I M S Kasauli Major Norman Rainier I M S Asst Surgt C R Chetti Bassin Major T H Denby, I M S Chipli Honble Mr R T Greer, I C S, Calcutta

Original Articles

THE ANDAMANS THE PREVALENCE OF MALARIA AND ITS ADVERSE EFFECT ON THE HEALTH OF THE CONVICTS

By J. M. WOOLLEY,

MAJOR, I.M.S.

S. V. O., Port Blair

THE Andaman islands are situated in the Bay of Bengal between 10-14 N. latitude and 92-94 longitude. The group consists of 204 islands with a total area of 2,508 square miles. Among them there are three large islands, the North, Middle and South Andamans and the nearest land is Cape Negrais in Burma, distant 120 miles.

This Penal Settlement of the Government of India was commenced in 1858 and the number of convicts now amounts to 13,000. These men and officials and a few free people, the descendants of convicts, live on a small cleared portion of the South Andaman, quite a small area (only 327 square miles) when compared with the total area of the islands which are covered with very dense forest in which hostile aboriginal tribes live, which people are seldom or never seen, are of a very low order and shoot any escaped convict who wanders into the forests. Transportation convicts are shipped from Calcutta, Madras, and Rangoon at intervals. Only healthy men and women between the ages of 20 and 40 are sent. On arrival each man has to put in six months in the Cellular Jail (the only real jail in the Settlement), after this he is sent out to work in one of the numerous departments. It must be remembered that when once out of the Cellular Jail, life for the convict is much easier than if he had remained in an Indian Prison. There are no walls round the numerous convict barracks which are situated in different places often miles away from each other, and the semi-military order seen in ordinary prisons is non-existent. A well behaved convict in five years' time commences getting pay, and also has the privilege of cooking his food himself, and there are various grades of promotion for men of good conduct after a further period, some of them are allowed to marry female convicts and go and live in one of the numerous Self Supporter villages seen on the map, where the villagers cultivate their fields and grow rice, and other grain. Owing to the situation of the Andamans, the climate is a peculiar one. There is a heavy rainfall and at times the weather is much disturbed, indeed many cyclones in this part of the world originate in the neighbourhood of the Andamans. There is very little annual variation in the temperature 70-90, which is always at a high level. There is thus no cold weather. The rainfall averages 120

inches and the air at times is practically saturated with moisture, which condition, considering the high temperature, is very trying. Persons who have been resident in these islands for many years do not seem to feel it much they become adapted to the conditions, and again Burmese convicts who come from a country where climate conditions are somewhat similar, do much better than natives from the dry zones of Central and Upper India. These latter especially at first or if they get any illness suffer considerably from the great difference in climate, the total absence of a cold season, and the excessive humidity. In fact, for every Burman who dies from disease in Port Blair, many more Indians die, which shews the effect climate has in certain cases. It is true the Burman is of a happier disposition and has not the same religious prejudices against leaving his native land as the Indian convict but still the disproportion is large enough to shew the unhealthy effect of a climate absolutely different from that in which a person has been born and brought up.

2 Prevalence of Malarial Fever

Ever since the Settlement was started in 1858, the great difficulty to contend with from a sanitary point of view has been the remarkable prevalence of malarial fever. The small portion of the tropical islands in which the Settlement is now situated has been entirely cleared of forest, but on arriving at the outskirts of this area a very dense growth of forest is met with, the vegetation owing to the heat and constant and excessive moisture being as luxuriant as anywhere in the world. The numerous creeks and swampy areas are bordered by mangrove swamps and these swamps are uncovered by water at low-tide leaving exposed large areas of mud, which give off a characteristic swampy smell, especially after sundown. Convicts do not as a rule work among these swamps, but some of the Self Supporter villages are very near them, and from these people some of the severest cases of malaria (a form of malarial fever with jaundice, of which nearly 50% are fatal) are obtained. The number of these severe cases is, however, small. In 1909 there were only 40. The great majority of convicts are housed and work well away from these notoriously unhealthy areas, in regions that are well cleared and have been cleared for years, and in which efforts have been made to secure surface drainage. Efficient drainage is, however, very difficult to obtain in these islands without considerable expenditure and constant attention. Even brick drains require constantly cleaning to rid them of fungus and silt, and dug out water-courses very quickly become filled up with sand and grass. As regards the two islands Ross and Chatham on which there are respectively 495 and 376 convicts, it has been done and it may be

said that malaria is non-existent on these islands now. But as regards the Settlement on the so-called mainland, it is a very different matter. The high hills and broken ground have at their bases numerous watercourses which harbour mosquitoes, and effective cementing of drains and blocking in of ravines would cost a prohibitive sum of money.

Malarial fever is endemic in these islands, and during the commencement of the rainy season, June and July, it is seen at its worst. But at times the disease is much more severe than at others, in fact, there are epidemics of it, every four years on an average, these years being unusually unhealthy and shewing a high death-rate from all diseases.

This was the case in 1909. There were very few people in the Eastern part of the Settlement who escaped during the year. Large numbers of convicts did not come to hospital at all owing to the general prevalence of the disease, and there being no room for them in the hospitals.

The parasite commonly found in the blood of malarial patients is the malignant tertian or "Ring" form. Occasionally Benign Tertian or Quartan forms are seen and sometimes mixed infections, but the severe cases shew almost invariably the ring form.

Varieties of Malarial fevers

I have mentioned above the very severe form of fever with jaundice met with rarely among Self Supporter convicts who work in their villages in the swampy districts. These cases, which are, I think, undoubtedly of malarial origin, do not shew any of the above-mentioned parasites, but a small rod-like body, which is seen partly outside and partly inside the red blood corpuscles, the tail-like portion outside being motile, is seen in most cases.

These cases would appear to be instances of a very severe infection which even the seasoned Self Supporter convict (who has spent years in the Andamans, and who may be regarded as almost immune to ordinary attacks of fever) is at times unable to resist. The disease is almost entirely limited to these men, and the cases occur at the time when they work hard all day and at times late in the evening, standing knee-deep in water preparing their rice fields at a favourable time of year. There were 40 of these cases in 1909 with a high mortality. The symptoms are intense jaundice occasionally with an haemorrhagic rash, much bile in the urine, sometimes albumen, a tendency to cardiac failure, and cerebral symptoms (delirium) and congestion of the conjunctivæ.

There may or may not be a rise in the temperature. No ordinary malarial parasite is found, and there is no enlargement of the spleen. In some instances death from cardiac failure occurs very quickly after the onset of the disease.

2 The ordinary malignant attack of malaria commences with rigors and a rise of temperature to 105, or so, which may last one to five days or longer. There is frequently vomiting and diarrhoea, also the spleen is enlarged, and at times the liver. Examination of the blood shews the malignant parasites.

As regards the incubation period of this disease, i.e., the time elapsing between infection and the onset of symptoms, there is good reason to believe that it is very short here—36 hours even in some cases. Quite recently some cases have come under observation in which, although there had been no fever for years, a typical attack of this form of fever followed a stay of a few hours or a day in one of the feverish parts of the Settlement. The symptoms came on in each case about 36 hours or two days afterwards.

3 Benign and Quartan forms occur, but yield easily to treatment and are of no special interest.

4 Chronic cases of malarial cachexia in individuals who have for years suffered from many attacks are very common. The temperature rises at times, often after a chill, and the blood may shew crescent forms, or malignant or other forms or nothing—pigmentation of skin, anaemia and emaciation and enlarged spleens are found. The hospitals always have many of these cases and their reason for being in hospital, is that, although they may have no actual fever yet they are on account of debility and emaciation, quite unfit for labour, being thin, miserable looking men, prematurely aged, and in every one of the four large hospitals a fair number of these cases end with ascites, which is apparently caused by old standing liver trouble in which the liver contracts and hardens and enlargement of the abdomen due to the collection of ascitic fluid follows. These cases almost invariably do badly, but they often linger for many months.

5 The description of the varieties of malaria will not be complete without mention of the cases of severe anaemia that are comparatively frequently met with—as a rule the patient has been under five years' resident in the Andamans. The anaemia is intense, the conjunctivæ, mucous membranes, skin and tongue, etc., being almost bloodless. The face often shews black patches on the nose and cheeks, and there is frequently seen pigmentation of the tongue. An analysis of the blood shews sometimes less than 30 per cent of haemoglobin and a corresponding decrease in the number of red corpuscles. There is an increase of mononuclei. These cases are chronic, some recover slowly under quinine and iron mixture.

As a rule no parasite is found or occasionally after a prolonged search one or two crescentic bodies, but malarial attacks have been frequent earlier in the case. As might be expected, there is a danger of syncope in these cases.

In spite of the absence of the parasite, there is little doubt that the cases are malarial in origin, the cause probably being a destruction of red corpuscles in the first place and an inability, on account of poor physique, to replace them. The spleen may or may not be enlarged.

A similar condition of extreme anaemia is seen in cases of ancylostomiasis. Consequently before regarding these cases as definitely malarial, the patient is given a thorough treatment with thymol, often on more than one occasion, to make certain of eliminating this possible cause.

Varieties of mosquitoes met with in the Andamans

There are altogether six species of anophelinae in these Islands.

1 Myzomyia Rossii is by far the commonest, it occurs nearly everywhere in the Settlement, breeding principally in swampy ground, in wet hollows, and on moist hill sides—generally in small puddles, occasionally in larger pools—never in large ponds. It prefers muddy water, being particularly fond of holes made by the feet of cattle, buffalo wallows and the edges of ponds and drains. It bites mostly at night and breeds all the year round, but is in by far the greater numbers from May to July.

2 The other common mosquito in the Settlement is Myzorhynchus Baibrostis. It occurs principally in dense evergreen forests in moist places. It bites by day as well as by night. It breeds in large numbers from May to December and in very wet places all the year round.

3 Neo-Myzomyia elegans breeds in the same sort of ground as Myzomyia Rossii, which it is very like. It is, however, comparatively rare.

There are also three other unidentified species. They are all rare, and may, for practical purposes, be disregarded. The two first named, viz., Myzomyia Rossii and Myzorhynchus Baibrostis are the two important species in the Andamans.

I am indebted to Mr R F Lewis, Deputy Superintendent, for these notes on the anophelinae.

3 Prevalence of Dysentery

This disease occurs mostly during the months of June, July and August, that is to say, at the same time or perhaps a little later than the rise appears in the number of malarial fever cases.

It is the disease that causes most deaths among the convicts, and is of a severer type than that met with—in India, and much less amenable to treatment. In fact, in the event of a case not yielding to treatment and continuing for any length of time, ultimate recovery becomes less probable, and although many such cases linger for months, yet in the end recovery is rare. Again another cause for the prevalence of the disease is that, when the disease has once occurred, there seems to be a great tendency in

this climate towards a relapse. It seems that the ulcerated intestine heals slowly, and that any indiscretion in diet or a chill is liable to bring on a fresh attack. As a matter of fact, there is no doubt that a sudden chill, brought about often by a rain squall followed by high wind, convicts working in the open with very little clothing on, is quite capable of causing dysenteric attacks, and it is not difficult to understand how this cause may act, seeing that the temperature is usually between 80 and 90, perspiration abundant directly one moves, a sudden wetting and wind on a perspiring body surface results in a change in the volume of blood in the peripheral circulation and congestion for the time of the internal organs, liable as it would seem to cause catalepsy and derangement, which would be more seriously felt in the event of there being any old lesions or partly healed ulcers in the intestines. And now arises the question as to which variety of dysentery we are dealing with.

Regarded from a clinical point of view cases vary as to their symptoms.

Firstly, there are cases which occur with a sudden onset, often in subjects who are in good health—these cases are more amenable to treatment than most, and as a rule recover fairly well, with but little tendency to relapse, provided a fortnight or three weeks is allowed in hospital after the subsidence of dysenteric symptoms, so as to ensure healing of the intestinal lesions.

Secondly, there are cases in which relapse is frequently seen probably due to a chronic ulceration of intestines which heals very slowly in individuals with poor resistance, and in which any slight cause may bring about a recrudescence of the attack. These cases are worse to deal with than those in the first category, and convicts of this description are of very little use from a labouring point of view, as they are frequently going sick.

Thirdly, there are the numerous cases which appear to bear a much more definite relationship to previous malarial infection. The sudden onset as seen in the first mentioned cases is not met with, but the malady seems to begin with a failure in the digestive powers, and gradually getting worse, becomes at last of a dysenteric nature, practically indistinguishable from the relapsing kind of cases. These cases were very numerous in 1909 during the malarial epidemic and were very difficult to treat the rapid emaciation following the inability to assimilate nourishment being a marked feature, and leading in numerous instances to a fatal termination in a comparatively short time, even a month or less in some cases.

Examination was made in many instances in order to ascertain the nature of the parasite associated with the disease.

In 30 per cent of cases amoebæ were found. Those cases in which they were not found were presumably due to a bacterial infection, but no relation between the parasites found and nature of the symptoms was seen.

Another interesting point which must not be lost sight of was the non-occurrence of liver abscess. This was never found *post mortem*. It becomes clear from this fact (and it is a striking feature when the number of severe dysentery cases is taken into consideration) that dysentery with tropical abscess as a result is not the variety of the disease met with in the Andamans.* This is somewhat surprising as enlargement of the liver is often seen, concurrently with an enlarged malarial spleen as a rule—but this liver enlargement, it would appear is due less to actual hepatitis of a nature leading to abscess, than to an enlargement of a malarious nature, due to some changes taking place in the organ in connection with the lysæmia that is brought about by the malarial infection in the blood.

Relation between the two Diseases

It was very noticeable during the epidemic of malaria in 1909 that in many instances attacks of dysentery appeared after attacks of malaria.

In the Cellular Jail this was especially remarkable, and it will be necessary to say a few words about this institution here. This jail accommodates some 700 convicts. Every new arrival in the Andamans has to put in 6 months in this jail, before being drafted out into the Settlement to work at some one of the numerous stations. There are also incarcerated here some 300 other prisoners, who through misbehaviour outside are sent back to jail for various terms of imprisonment. A special medical officer is in charge of this jail and observations are most carefully taken, the sickness being under much better control than outside, where undoubtedly men frequently evade coming to hospital when ill, preferring for reasons of their own to remain outside on the chance of getting better without treatment.

The year 1909 was especially unhealthy from a malarial point of view in the district in which the jails are situated. The Cellular Jail since it was started in 1905 had never before experienced such an unhealthy year as that of 1909. Apart from actual admissions there were during June and July no less than 2,000 cases detained (*i.e.*, not entered in the hospital books as admitted) for malarial fever. This gives an idea as to how prevalent the disease was then. At the same time the dysentery cases began to occur. Dysentery had never been so severe in the jail before, and the type of the disease was of an unusually severe nature. Every convict in Port Blair is

provided with a Medical History Sheet, on which are entered all the illnesses for which he is admitted into hospital, and it was noticed at the time that an entry for dysentery very frequently followed one for malaria a few days or weeks previously.

Malaria and dysentery then attacked successive batches of convict as they arrived from India by sea from June to August 1909. A batch arrived on the 20th August 1909. Not one of these was attacked by either disease—and very few fresh cases of dysentery occurred in the jail after that date. How can this be accounted for? The conditions relating to the feeding, living, working, etc., of convicts had not been altered in any respect. The explanation appears to be that the epidemic of malaria practically ceased before August 20th and with it the dysentery cases also.

There is situated about 1½ miles from the Cellular Jail a Female Jail for 300 convicts. Here, too, at this time malaria raged—dysentery also was more severe than usual in this institution, and also of an unusually severe type—causing a high death-rate.

Leaving the jails, the same peculiarity was noticeable in the large convict hospital from the district in which the jails are situated, and in which district malaria was so unusually prevalent.

On going into the dysentery ward and looking at the Medical History Sheets, an attack of malaria was shewn in over 70 per cent of cases as having occurred before the dysentery came on.

It now becomes necessary to discuss the clinical aspects of malarial fever attacks and to notice some peculiarities observed. There has been noticed a great tendency towards derangement of the alimentary tract—vomiting and diarrhoea were very frequent, often of a violent character and several days invariably elapsed before the digestive system returned to the normal. These symptoms were especially noticed among Europeans, and were carefully observed, and there can be no doubt that the convicts suffered in just the same way. The abnormal condition of the digestive tract brought about by the disease can be easily understood when it is pointed out that there usually existed stomatitis and in fact a general catarrh of the intestinal tract as shewn by the vomiting and diarrhoea.

It will be readily understood that, from the above condition of intestinal catarrh to that of dysentery is but a short step.

I may now proceed to describe what may be regarded as an average case of sickness in which these two diseases occur in close relationship with each other.

A convict usually from the dry region of Upper India, and often one who has been only a year or two in Port Blair, complains of dysentery. His Medical History Sheet shews previous attack or attacks of malaria. The spleen is enlarged

* The same rarity of liver abscess is well known in "Jail" dysentery in India.—ED., I.M.G.

and the skin pale and pigmented in certain spots, face, tongue, etc. Further enquiry shews that he has had indigestion on and off for weeks before coming to hospital, with diarrhoea at times. His condition now is difficult to treat. He is given either castor oil emulsion or ipecacuanha or magnesia sulphas or some other recognised form of treatment and dieted with milk alone, or milk and arrowroot. Improvement does not follow as it should. For a few days the stools are better, there being less mucus, etc. Then one day the condition becomes as bad as ever frequent stools, much mucus and small quantities of blood. It is evident the intestine is ulcerated. This state of affairs goes on for weeks, and the longer it goes on, the less is the chance of recovery. Eventually a slow recovery may take place, but such men are never of much use for labour again, as there is always a liability to recurrence.

In fatal cases, a necropsy shews extensive ulceration with pigmentation of the large intestines, and often enlarged spleen and all organs much shrunken, the body being reduced to mere skeleton.

It may be considered that malaria and dysentery are distinct diseases, the one being quite independent of the other, and that when such cases as the above occur they are merely instances of a much enfeebled individual (enfeebled by malaria) becoming infected with a bacterial dysentery. It has already been admitted that a dysentery of this acute type is fairly common in the Andamans.

In opposition to this view, it may be said that malarial dysentery cases shew a very insidious commencement, the indigestion and occasional diarrhoea often continuing for some time before it can be said that a dysenteric condition obtains. If these were infected cases, one would expect, especially if the individual were anaemic and debilitated by malaria and his resistance thus lowered, a very acute onset with blood, tenesmus and very frequent stools occurring in a case in which there were no special abdominal symptoms before.

Again there have been cases among Europeans in hospital with malarial fever in which special care was taken to make certain that no infection should take place. Yet many instances have occurred and only recently a typical case of the disease as above described occurred here, in a case of severe malignant tertian infection. The diarrhoea with mucus being very persistent and lasting for over 14 days. Had this case occurred in a convict, it is quite likely that it would have done badly—either due to delay in being treated, or to disobedience as regards diet, a very common occurrence, as patients become very hungry, but are quite unable to

digest anything, but milk and even that requires peptonising at times.

It may be noted that the remarks made in this paper are the result of clinical observation of large numbers of cases in the four large convict hospitals here. The daily average number of sick in these hospitals during the unhealthy rainy season amounts to 1,458, out of which the average daily number of malaria cases is 770 and of dysentery cases 179.

And again malarial fever was seen in a very severe form in 1909, and this being so, the results of malarial infection were more likely to attract notice than if the year had been a normal one, in which the results would have been less remarkable being of a milder nature.

The conclusion arrived at is, that there is a distinct relation between the severe form of malaria met with in these Islands, and the high dysentery rate. That this relation is something more than a mere predisposition to indigestion and dysentery, such as might be caused by the debilitating effect of attacks of malaria at frequent intervals, but that the nature of the malarial infection causes a catarrhal condition of the alimentary tract, causing at first indigestion and derangement of the liver, and in many cases gradually becoming aggravated into a condition which is indistinguishable from dysentery.

It may be said that if these dysenteric cases were due to malaria the blood would always shew the parasites but curiously enough it is only in about 10 per cent of these cases that parasites are found (crescents generally), and when once the dysentery is established and becomes chronic, parasites are hardly ever found, nor does any rise in temperature of a malarial nature occur.

Preventive measures in the direction of giving a prophylactic issue of quinine were thoroughly tried in 1909, 15 grains once a week being given. That it was given there is no doubt. The results were unsatisfactory. It may, of course, be that the fever would have been worse if it had not been given, but when compared with the success that attended similar measures in the Punjab jails in 1908, the issue here must be regarded as unsuccessful. In the two jails, which being enclosed places are under better control, more elaborate attempts were made in the prophylactic issue of quinine, e.g., 15 grains twice weekly, 10 grains 3 times a week, also on two successive days, but it cannot be said that any success attended these efforts.

There have been several cases in which 10 grain injections of quinine have apparently succeeded, but for obvious reasons this treatment cannot be adopted as regards the convicts, especially in distant places.

And again the swarms of mosquitoes from the neighbouring jungles cannot be controlled in cases where the barracks are situated in

out-of-the-way places, so that infection after infection must occur. As above stated the small islands Ross and Chatham are free, they are thoroughly cleared, and far enough away from the jungle to remain free. Viper, another small island five miles away, is not so good—it is very near dense virgin forests on the south side. Attempts are being made to render the crowded area round Aberdeen better drained and cleared. It is expensive but justifiable because of the number of people in that small area elsewhere, however it is impossible to clear the ground and make brick or stone work drains, etc., the expense is quite prohibitive. The Andamans always has been very malarial and as long as the present conditions prevail, of sending convicts out to cut timber in the dense forests, teeming as they do during the greater part of the year with anopheline, such as *Myzophynchus Barbostriatus* which bites by day as well as night, it will be understood how difficult the problem is.

It will be seen from the accompanying charts which cover a period of 20 years that as a rule a high death-rate from malarial fever is accompanied by a still higher high death-rate from dysentery. The years 1899 and 1900 do not bear this out however—but there is an explanation for this. The years 1899 and 1900 shewed remarkably low rainfall—the lowest during the period under review. The failure of rain and wind in 1899 is stated to have caused great vicissitudes in temperature which caused an abnormally high death-rate among the chronic dysenteric—invalids, nearly all of whom, having lived through the preceding healthy years, died in 1899, thus causing a high dysentery death-rate in 1899, and a comparatively low one in 1900. This fact probably accounts for the discrepancy during these two years. Apart from these abnormal years, Chart I shews pretty clearly that when malarial fever is severe, then also a high dysentery death-rate may be looked for, in other words, that other conditions being equal, i.e., there being no great abnormality as regards climatic conditions (such as obtained in 1899 for instance) the mortality curves for the two diseases will be found to correspond.

As regards the two charts shewn, the figures have been corrected and shew the mortality rates per 10,000. It will be seen that the loss from dysentery is more serious than that from actual malarial fever, and again the variation in the different years in the number of malarial cases is not by any means so great as is the case in the other disease. But a difference in say, some twenty more deaths or so in a year from malaria itself, probably means that that year is an epidemic year as compared with others, and consequently the actual number of cases of malaria in that year would be very numerous—consequently a larger mortality from dysentery would be expected.

Referring to Chart I in the year 1892 malaria shews a high figure and with it dysentery—during the five years following this, malaria fell, and again the dysentery is lower. But from 1900 to 1906 there was a good deal of malaria, and dysentery remained at a high level, 1907 and 1908 shew much lower rates for both, but again in 1909 there was an epidemic, and consequently the dysentery deaths again rose.

There is another disease that must be mentioned in connection with this subject, namely, tubercle of the lung. This disease is common in these islands, and although (see Chart II) there does not appear at first sight to be any marked resemblance between the curve and those for malaria and dysentery, yet there is a certain general similarity when regarding the figures over the two decades. For instance from 1899 to 1905 all three shew a higher level, while in 1906, 7 and 8, there is a decrease in the number of cases.

The question then arises—Is there any reason why, during an epidemic of malaria, tubercle of the lung cases should become more frequent? It would appear that there is a reason for this. The dampness of the climate makes respiratory complaints much more common than in India, and when it is remembered that a malarial epidemic means that the hospitals are crowded with malarial and dysentery cases, it is easy to understand how this crowding together of sick in a hot and often nearly saturated atmosphere, must favour the occurrence of tubercle of the lung.

In conclusion, the Andamans must be regarded as a malarious country, in which from time to time as the chart shews, epidemics of malarial fever occur. Such a year was 1909 and the unusual number of cases of dysentery which occurred at the same time invited a comparison of figures from these diseases during previous years.

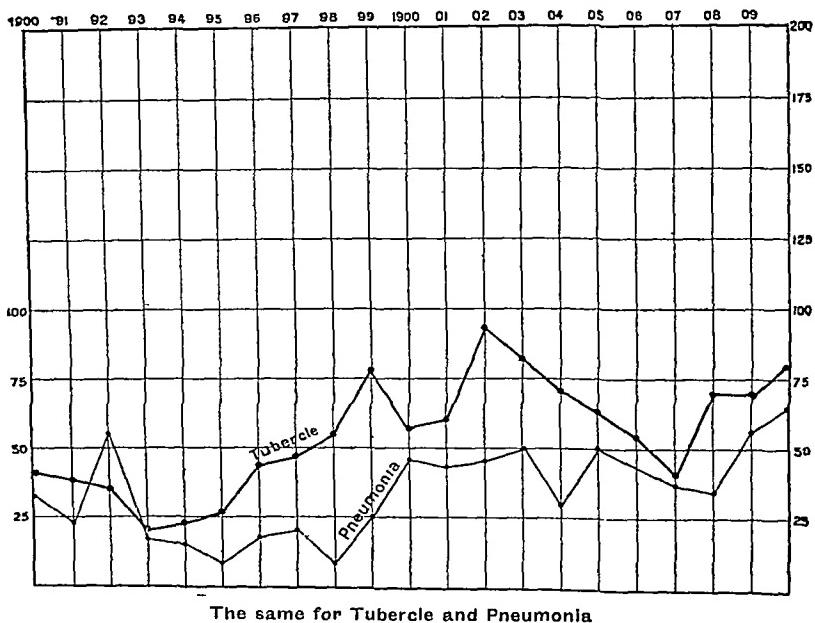
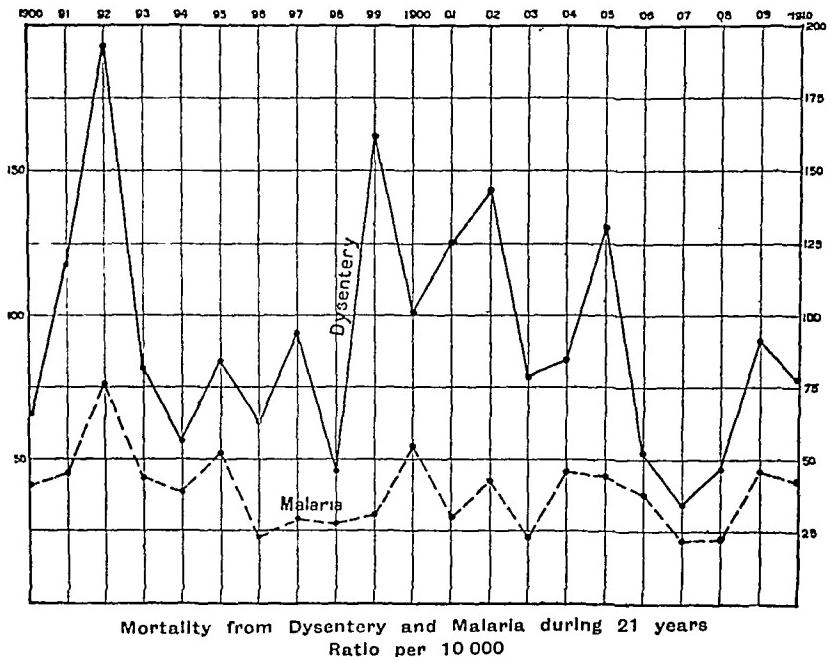
The Andamans death-rate is a high one when it is compared with Indian Jail figures and especially so when it is remembered that only those transportation convicts are sent there who are in good health and between 20 and 40 years of age. It is the high figure for, especially, dysentery, and to a lesser extent tubercle and pneumonia, which attracts attention, and the way in which these diseases seem to follow malarial epidemics, leaves but little doubt that it is the prevalence or the reverse of the latter disease that brings about a healthy or unhealthy season. Less malaria means less dysentery, and so less crowding in the hospitals, and thus better figures for respiratory diseases also.

Hence the great importance that every endeavour should be made to render at any rate the more crowded areas as well treated as regards sanitary matters, as have been the islands Ross and Chatham, whereas has been stated above malarial fever does not occur.

THE ANDAMANS THE PREVALENCE OF MALARIA AND
ITS ADVERSE EFFECT ON THE HEALTH
OF THE CONVICTS

BY MAJOR J M WOOLLEY, I M S,

S M O, Port Blair



The same for Tubercle and Pneumonia

SOVE NOTES ON OPERATIONS PERFORMED
FOR SUPPURATION IN THE PELVIS
DURING THE LAST TWELVE
MONTHS

BY C C BARRY,
MAJOR, I M S,

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ALTOGETHER 30 patients were operated on for suppuration in the pelvis, 30 being returned under the heading Pyosalpinx and 9 under that of pelvic abscess. In accordance with the views of Pozzi, a clinical distinction has been made between pyosalpinx and pelvic abscess. This latter name has been applied to encysted collections of pus in which the attachment to the neighbouring parts has been so close and intimate as to render complete removal impossible or too dangerous to attempt. In the majority of such cases the collection of pus has however, been nothing else than a large pyosalpinx, the walls of which had become so generally adherent to the walls of the true pelvis as to prohibit any attempt at complete enucleation, but the great difference in treatment of the two classes of cases seems to warrant a distinction in nomenclature.

In dealing with pelvic suppuration, it is important to differentiate between those due to the more usual pyogenic organisms and those due to infection with the gonocoecus. The former usually follows child-birth or miscarriage, in gonococcal cases, there is usually a history of vesical irritability and leucorrhœa following shortly after marriage, followed at later period by symptoms of acute metritis, then later still by those of acute salpingitis. As pointed out by Hellier, the gonorrhœal process may halt long at the internal os before spreading to the fundus, and it is not usually till the disease spreads to the fundus that the symptoms described as acute metritis occur. Even then, the extension of the inflammation from the uterus to the oviducts does not as a rule usually follow immediately, and several months may elapse before the symptoms of salpingitis and pyosalpinx occur. For these reasons it has been common to find amongst the patients operated on a history of infection some 9 to 12 months before seeking admission to hospital.

After a careful consideration of the previous histories of the patients requiring operation, the source of infection has been classified as under —

Pyosalpinx 30 cases

Arising from gonorrhœal infection	20
Arising from infection connected with child birth or miscarriage	4
Arising from tubercular infection	2
Arising from streptococcal infection	1
Of doubtful origin	3

Pelvic Abscess 9 cases

From gonorrhœal infection	6
From tubercle	1
Of doubtful	1
Connected with secondary syphilis	1

That is out of a total of 39 cases the cause of the infection was gonorrhœa in 26

It has been long recognized that gonorrhœa is the chief cause of suppuration in the pelvis, and these figures bear out this fact in a marked manner. The extreme prevalence of venereal disease in Rangoon has for many years been the subject of much earnest consideration amongst medical men here, but I think this is the first time that the ravages of gonorrhœa amongst the female inhabitants have been investigated.

Out of the 30 cases of pyosalpinx operated on, it was found necessary to remove both tubes in 20. Out of these 20 cases, in 16 the infection was due to gonorrhœa showing how widely this class of infection spreads and bearing out the truth of the saying that the majority of women affected with gonorrhœal infection of the uterine appendages become sterile. In considering the question of sterility, it must be borne in mind that gonorrhœa of the vagina and uterus does not in the majority of cases prevent conception as long as the oviducts still remain unaffected by the ascending course of the infection and a woman may not infrequently bear one child and never conceive again, a condition termed by Sauger "one child sterility" (Hellier). Out of the 20 patients operated on for gonorrhœal pyosalpinx, 11 had not given birth to any children and 6 to but one. I would mention here that only a very small proportion of the patients suffering from gonorrhœal pyosalpinx were prostitutes, by far the greater proportion were respectably married women who had been infected by their husbands. This effect of gonorrhœal infection on future child-bearing is a matter of considerable importance. Sterility in a woman is a much more serious condition in the East than in the West where the marriage tie is stronger and women are admitted to the same social position as their husbands. In the East, a barren woman is, more often than not, neglected and uncared for.

In 18 cases operated on for pyosalpinx, a bacteriological examination was made of the pus in the parts removed. In two cases the presence of gonococci was verified, in five intra-cellular resembling gonococci were found, in one streptococci, cocci were abundant and in ten the pus was sterile.

In the majority of cases of pyosalpinx due to gonorrhœal infection, the pus becomes sterile. The time for the death or effective attenuation of gonococci within the Fallopian tubes is given by Clark and Norris as usually two to four months, though in exceptional cases they may survive longer.

In the two cases mentioned above in which gonococci were verified, a period 8 to 9 months elapsed between infection of the tubes as instanced by a history of symptoms of acute salpingitis and the date of the operation performed.

In five other cases showing intracellular-cocci resembling gonococci, but in which the nature of the organism was not fully determined by cultivation, the period between the occurrence of symptoms indicating infection of the Fallopian tubes, and the time of the operation varied from 9 months to 1½ years.

The pyogenic organisms other than the gonococcus which give rise to pyosalpinx do not, as a rule, attenuate so quickly being much more erratic in their behaviour, they may remain encapsulated without losing their virulence for long periods, a matter of much importance should rupture of the collection of pus occur during operation.

The average age of the patients operated on for pelvic suppuration arising from gonorrhœal infection was 22 years, whilst in those patients in whom no history of such infection could be traced was 32.

The youngest patient was aged 15. Her history was instructive and pathetic. She was of respectable parents and had been married three months, immediately after marriage she suffered from a typical attack of gonorrhœa followed two months later by pelvic peritonitis for which she came to hospital. After 15 days rest in bed, the urgent symptoms had subsided, laparotomy was performed, both tubes and one ovary were found disorganized and full of pus, and were removed, but it was found possible to leave one ovary. The cervical discharge and the pus in the tubes all contained gonococci. If as seems probable the infection of the oviducts was only of 15 days' duration, the amount of damage sustained in a short time was remarkable.

The next youngest patient was a Chinese prostitute, aged 16 years, with a pelvic abscess due to a large pyosalpinx. The cervical discharge contained gonococci, though the pus from the abscess contained only a few micro-organisms of a typical character.

Of the patients in whom the pelvic suppuration seemed due to tubercle both gave positive reaction to Calmette's tuberculin test. One, an unmarried Eurasian girl, did very well. The pus was evacuated and she subsequently underwent a course of tuberculin injections. She left hospital much improved and seen six months later had put on 21 lbs in weight and seemed in excellent health, there was very little thickening in the pelvis. The other case was relieved of her urgent and painful symptoms but there was no doubt the lungs were slightly affected. She insisted, however, on leaving hospital before she could be put under a course of tuberculin treatment.

The operations for pyosalpinx were, with exception of one, all performed in the quiescent period, that is to say, though pain and discomfort were present, there were no urgent symptoms of pelvic peritonitis. The one patient operated on in the acute period died. She was admitted

with acute pelvic peritonitis and a high temperature, with rest and treatment the temperature fell but rose again four days later with very acute pain and commencing symptoms of general peritonitis. On opening the abdomen, both tubes were found slightly distended with pus and there were many recent adhesions. Both tubes were rapidly and easily removed, and a drainage tube left in the pelvis. The operation took but a short time, the patient, however, died in 24 hours of general peritonitis. From the tubes removed, streptococci in short chains were isolated. It is, I am afraid, very likely the general peritoneal cavity was infected by the breaking down of the recent adhesions, though every precaution to guard against such an infection was taken at the time of operating.

If the time of operation can be chosen, the period of acute infection should be avoided, with time the pus will, in many cases, become sterile and thus the chance of infecting the peritoneal cavity diminished. Not only will the danger of the occurrence of acute pelvic or general peritonitis be diminished, but the liability of the formation of subsequent adhesions will be lessened and thus the ultimate success of the operation more assured.

As regards the method of operating, whenever possible the collection of pus was enucleated, laparotomy being performed for this purpose. In native patients who are, for the most part, unwilling or unable to undergo a prolonged course of rest and treatment, I believe better results are thus obtained than by merely opening up the collection of pus and draining it through the vagina. This latter method of treatment was only resorted to, when any attempt to enucleate the collection of pus was obviously too dangerous to attempt. The after-treatment of cases treated by vaginal drainage is to my mind more tedious and involves daily dressings which are often painful. I have found native patients not infrequently resent this and some have insisted on leaving hospital before the abscess cavity was properly closed up. For this reason, I believe in doubtful cases, it is a good practice to perform an exploratory laparotomy and thoroughly investigate the condition of the pelvic trouble. The possibility of safely and satisfactorily enucleating a pyosalpinx depends much on the experience of the operator and with increasing experience many collections of pus which at first sight appear impossible of safe removal will be found by careful and cautious work to be capable of complete enucleation.

In the above series of operations, the rectum was wounded in two cases, the possibility of this accident happening was recognized at the time of operating and the tear was at once repaired, in neither case was the convalescence of the patient impaired.

As regards the technique of the operation great stress was laid on the adequate packing off with gauze swabs of the area of operation from the general abdominal cavity. Any extra time spent in doing this, is time well spent and no operation should be commenced till the Surgeon is satisfied the area of operation is thoroughly isolated.

The amputation of the tubes was carried out in the tissues of the uterine cornua the incision in the uterine substance being closed with catgut sutures. This method certainly minimises the chance of infecting the peritoneum from the septic stump of a Fallopian tube and the formation of a suture sinus.

As pointed out by Kelly the complete checking of all oozing of blood before closing the abdomen is a point of the greatest importance and is well worth any extra care and attention nothing is more likely to give rise to future suppuration than a collection of blood left in the pelvis after operation even if it be only of small dimensions. The preservation of both or at any rate one ovary should always if possible be carried out and in doing this, great care must be taken to interfere as little as possible with the blood supply of these organs if subsequent trouble is to be avoided.

It is also necessary before finishing the operation to fix if necessary the uterus and ovaries in as nearly their normal position as possible. In operating for pyosalpinx especially if both tubes are affected much mutilation of the broad ligaments is frequently unavoidable, the organs left behind being deprived of their natural support will often prolapse into abnormal positions most frequently into Douglas' pouch and remain there fixed and tender. If this occurs, the operation, as a means of curing the patient of her pain and discomfort, is a failure and to emphasize this point, I would mention I have twice lately had to operate on patients for this condition. In both patients the uterus and one ovary enlarged and inflamed were matted by adhesions to the bottom of Douglas' pouch, and the patients themselves expressed their condition as being worse than before the primary operation.

It must be remembered the successful enucleation of the collection of pus does not constitute the whole operation, and that no precaution must be neglected that will help to rid the patient of the pain and discomfort she feels and which is the primary cause of her consenting to undergo surgical treatment.

Abdominal drainage was not as a rule resorted to, its use being generally restricted to those cases in which the gut was wounded, or in which it was found impossible to satisfactorily check all oozing of blood. The escape of pus during the operation does not as a rule demand subsequent drainage. Any collection of pus should always be aspirated before its removal is attempted, and even if a little escapes it is generally sterile.

Provided the escaped pus is quickly swabbed up little harm is likely to arise. I look on the oozing of blood into the pelvic cavity as a much more serious matter, forming as it does a suitable medium for the growth of bacilli, and in all cases where the field of operation cannot be left satisfactorily dry drainage is indicated. In these cases the drainage tube should not be left in for more than 8 to 12 hours.

Of the 9 operations for pelvic abscess 1 died. The method of operating has been to open the collection of pus from the vagina and to plug the cavity with iodoform gauze. If more than one collection of pus existed the intervening walls were broken down so that one single cavity was formed. The gauze plug was removed after 48 hours and the cavity subsequently irrigated and repacked daily. One patient died. She was suffering from secondary syphilis at the time of admission and in a very poor state of health. The immediate cause of death was meningitis of doubtful origin.

One patient was discharged cured but returned in 6 weeks on account of pain. A laparotomy was performed and, in order to satisfactorily clear the pelvis of the diseased tissues, it was found necessary to remove the uterus.

SUBLUXATION OF THE PENIS

BY NORMAN RAINIER, M.R.C.P., D.P.H. (Cumb.),
MAJOR, I.V.S.

THIS injury appears to be so rare that I think the two cases that have come under my observation to be worthy of record more especially as the clinical condition recorded in Treves' work, judging by my own and the cases I have collected, is apt to mislead.

Of the five books I have been able to refer to Erichsen and Rose and Cawless do not appear to mention the injury, Spencer and Gask merely mention it, while Treves' is the only work that gives any details, Neal's Medical Digest refers to five cases, of which through the courtesy of the Librarian of the Royal College of Surgeons, I have been able to obtain summaries.

1 My first case was a Gond boy, 14 years, admitted 11th April 1907 with a history of a gone in the perineum by a bullock.

On admission my assistant found a ragged lacerated wound of the scrotal raphe and prolapse of both testicles. These after cleaning he replaced and sutured the wound, he also passed a catheter and drew off 8 ounces of bloody urine.

I was asked to see the boy three days later as he had pain on passing water.

The penis appeared normal, but on palpation was found to consist only of the sheath, the wound had partly given way and urine was passed both by the sheath and the wound.

Under chloroform on enlarging the wound the glans penis was observed lying above and behind the testicles, it was drawn through the sheath with sinus forceps, the sheath circumcised and the torn preputial fold trimmed and stitched to the skin, healing was uneventful. I traced the boy two months ago, the penis appeared perfectly normal and power of erection complete.

2. The second was a young Hindoo, 16 years, brought to me curiously enough some two months later, as his inability to have erections jeopardised the consummation of his marriage.

His history also was that a bullock goaded him (through the foreskin) and his penis disappeared, this is almost too extraordinary to be credible as a pure accident especially, as boys of his age wear a loincloth, from one's knowledge of the East I quite believe the history, but I take the bullock to be a dissenting passive agent.

On examination the penis again appeared perfectly normal, but on palpation the sheath was empty as far as the scrotal junction where a firm body was felt.

Under chloroform the penis was easily seized and drawn through the sheath and fixed by strapping where it quickly became adherent in its old position.

I have not been able to trace this case.

Of the Collected Cases.

3. In 1851, M. Nélaton saw a boy aged 6 years 9 days, after a fall from a cart with urine issuing from a wound near the left buttock. On taking hold of the penis he was astonished to find it destitute of substance. The penis was found in the scrotum and replaced, but evidently complicated by a ruptured urethra as no urine was passed at the time of report by the natural passage.

4. In 1875, Moldenhauer reported a case of a man 57, drunk, who fell from a cart and received severe injuries in the pubic region from the wheel. The scrotum was distended with blood and urine, glans penis could not be recognised nor a catheter passed, the sheath being full of clot ("a bloody mass")

Several attempts including perineal incisions to find the urethra failed.

A fortnight later an abscess formed opposite the iliac spine, and on opening it urine escaped, and on enlarging it down to the scrotal wound the penis was found buried in the abdominal fat and densely adherent except the glans.

The patient objected to a free-ing operation and, though painless erections occurred, was content with the penis in its new bed. The finding of the entire penis and not the ruptured urethra was a matter of the greatest surprise to the surgeon.

5. In 1898, Malinovski reported the case of a man whose trousers were caught between two

cog-wheels, with extensive laceration of the prepuce and scroto-penile sheath the penis subluxating through the scrotal wound.

Restitution was not attempted till four months later, and then only for sexual purposes. The glans penis emerged from the left scrotum and the sheath covered it like an apron. The sheath was then impermeable and undilatable by tents, but a plastic operation was performed with excellent results as regards the power of erection but with some shortening.

The penile sheath was not then sufficient to form the entire covering of the replaced penis, scrotal tissue being also used.

6. In 1895, Lieutenant-Colonel Fischer, I.M.S., reported a case in the *Lancet* in full detail.

A boy, aged 5 years, suffering from extravasation of urine due to a cart injury. Penis appeared normal at the time.

Cock's operation performed with free incisions.

Seen by Fischer six months later with a urinary fistula above and to the left of pubis, the penis appeared normal but shrivelled, and a catheter could only be passed a certain distance.

The fistula was slit up and penis found firmly fixed at the base of the apparent penis.

In this case the sheath was slit and sutured round the freed penis with excellent results.

7. In 1895, Reid reported in the *Lancet* a case of subluxation into the pubic region due to a horse rearing and falling on his rider.

The case was seen within half hour of the accident.

The empty sheath was at once diagnosed, and the organ reclaimed and refixed with a perfect result.

Of these 7 cases 3 were due to cart-wheel injuries in the pubic region, one to machinery, two to bullock gores, and one to a horse falling on his rider.

Only one case can strictly be called a direct dislocation by force applied to the penis in its sheath, the others appear to be indirect due to a vis a tergo applied to the perineum, scrotum or pubic skin lifting the sheath away from the penis, as in no case is the external surface of the sheath described as torn or bruised, even in case 4 very completely described in the original, the sheath is full of a bloody mass but not itself injured.

I particularly wish to lay stress on the appearance of the empty sheath. In cases 4 and 7 only was a surgeon in immediate attendance and in neither was the condition diagnosed by sight, as Tieves' description would lead us to expect "looking like blown out gold beetle's skin."

In case 4, the bloody mass was taken to be the crushed glans and a catheter was inserted to relieve tension from a ruptured urethra.

In case 7, it is not actually described but no one would attempt to pass a catheter knowingly into an empty sheath.

In case 5 only did the penile sheath appear otherwise than normal, in this case the penis was protruding through the scrotum

In case 6 the penis appeared normal though shrivelled.

It was a matter of great surprise in every case, apparently to find on palpation or catheterism the penis to be absent except in case 4 where it was not even diagnosed until actually exposed by incision and case 5 where it was an obvious fact

The condition is unmistakeable, on palpation looking normal but feeling exactly like a rather thickened piece of the small bowel

As to treatment it is simple in recent cases, replacement either with or without incision secures a penis efficient in all its functions unless complicated by a ruptured urethra

In old cases a plastic operation may be necessary with an almost equally good result

THANATOPHIDIA

A FEW MORE CONSTANT SIGNS FOR DIAGNOSING CERTAIN SNAKES, AND A HINT ON TREATMENT

BY A BAYLEY DECASTRO,

MILITARY ASSISTANT SURGEON,

Fort Fulta, Hughli Defence

THE very interesting and important little article by Capt Green-Armistage, I.M.S., in the *I.M.G.* for March 1911, causes me to notify these few facts which I trust will be as helpful to the profession. The subject of the Thanatophidia of India has always appealed to me to be one alive with interest, and impregnated with facts which are daily being brought to light. It is, however, to be very much regretted that no two authorities live very much, if any, at all of the "common" among their views of either snakes, their special characters, the character of the poison, or the physiological action set up by that poison on a susceptible subject, and the reason for this is, I fear, that no one makes a real "all-round" and all year study of snakes, their characteristics, and their poisons, but rather that this very interesting science is either spontaneously taken up during the "Snake Season" or else only sporadically pursued.

The subject is, indeed, a very lengthy one, full of complications, and unfortunately (for the present only let us hope) full of contradictions.

Diagnosis of Snakes—To begin with, however, I should like to remark that, although the number of poisonous snakes fall under four distinct groups, and of one division of one of these groups—the *Bungarus*, there are twelve distinct species, I should like to remind my readers of the words of Major F. Wall, I.M.S. In his paper "Snake Bite and Treatment" read at the Bombay Medical Congress of 1909—"I would remind you that there are now known to be 39 species of poisonous terrestrial snakes inhabiting our Indian dominions,

besides some 30 species of sea snakes." It is a pity that this list was not recorded in tabulated form, for I am certain it would have been very helpful.

The determination of a poisonous from a non-poisonous snake by the character, arrangement, and number of the shields, is a most certain sign in the adult of every species, but in the young I have often found the true characteristics wanting, this however is hardly an important point, as the young snake of every group is harmless (By "young" I don't mean the stage at which the snake resembles an earth-worm, but rather a period more advanced.)

Yet we should not forget that abnormalities may be met with in adult snakes, just as readily as they are met with in other reptiles and animals. One point though as regards the ventral shield point of diagnosis, I have found most instable and useless, though I know that this sign is to be taken in conjunction with the others. In the case of the *Naja Tripudians*, *Naja Bungarrius*, *Bungarrius Fasciatus*, and *Coeuleus* they completely hide the small lateral scales when the snake is laid on his back, and the very same may be observed in the harmless *Passeista Mycteria*, picked up in any compound. On the other hand, a very marked and constant sign even in the case of the very young of the *Naja Tripudians*, is the colour of the ventral shields, this is one of a dirty grey, while that of those of the neck opposite the hood are either black or brown. This I consider a very important point, or I have never seen it in any other snake, except the *Naja* family, and should always be remembered, especially if a dead snake is examined and reported to be a *Cobra*. The *Daboia* and the *Enhydina* also have a constant colour sign in conjunction with certain ventral shields, or rather what I should like to term "lateral-ventrals," for they appear to be dark or even black shields which insinuate themselves between the laterals and ventrals crossing the lateral line, but not the median ventral line. It is my full intention to pursue this subject of coloured ventrals, and "lateral-ventral" shields in these two snakes, for I am certain that they are not indiscriminately scattered, but occupy an exact position in as regular a manner as any other used for diagnosis. Another reason why I don't wish to give a decided opinion of this as yet, is because I have only come across one *Enhydina*, although scores of Russell's vipers

Two other diagnostic signs, relating to two of the most common snakes met with practically all over India, are that the *Bungarrius Coeruleus* has a white tongue, and the *Bungarrius Fasciatus* a pink eye. These few points considered along with the others, should be helpful in determining the snake.

Symptoms, Signs and Treatment—In the case of treatment I must remark that the medical man called upon for aid must not in the least fiction be lead by the history as given by the patient or his friends. He must, as remarked by Maj. F.

Will, be chiefly—in some cases solely—guided by the local signs and symptoms, never forgetting in every case the effect of flight on the system, and the effect of auto-hypnotism, due to long cherished opinions and ideas in the lay mind

Briefly then the points to be observed are—

SIGNS AND SYMPTOMS

Viperine Poisoning—Swelling and ecchymosis

Serious haemorrhagic discharge—(after a time this discharge is seen from any, several, or each of the natural orifices)

Marked collapse Small thready pulse, cold sweats, nausea and vomiting Pupils dilated and insensible to light

Colubrine Poisoning—Nervous symptoms

Locally very considerable pain of a burning character, followed by swelling, tenderness and redness Patient sleepy, and weak in the legs

Nausea and vomiting set in early

Paralysis is of an acute ascending nature, legs get weak, patient cannot walk, then he cannot stand, then the tongue and larynx get effected Breathing laboured and slow, and ultimately stops, while the heart continues to beat for a good while

Another characteristic local sign, very clearly seen on a fair skin, is that of tissue changes Thus there is a central area of deep purple, around this an area of red fading to pink, and lastly around this zone the area of healthy tissues, the dimensions and intensity of these zones depending upon the amount of poison injected, the amount absorbed, and the time after the bite that the examination is made

I shall once again quote Major F. Wall and under the heading of signs and symptoms, tabulate those of flight and cobra poisoning

FRIGHT

(1) Onset of weakness often

sudden

(2) Involuntary prostration

Syncope

(a) Pallid face

(b) Cold clammy skin

(c) Feeble or imperceptible pulse

(5) Breathing shallow, sighing and weak

(6) No paralysis

COBRA POISONING

(1) Onset of weakness very gradual

(2) Recumbency voluntary

after some time owing to gradual loss of power of the legs

(3) Complete or semi unconsciousness

(3) Consciousness not impaired

(4) Head not effected

(a) Face natural at first,

livid later on

(b) Skin warm

(c) Pulse of natural force

and regularity

(5) Breathing gradually be

comes more and more

laboured and quickened,

gasping towards close

(6) Paralysis Gradual weak

ness of the legs, mounting

to trunk and head Head

droops, eyelids droop

Symptoms like bulbar

palsy appear

Character of Wound—Regarding the character of the wound, the prevailing opinion now is that it is lacerated, but I have seen as many lacerated as punctured, and I think that much, if not entirely all the characters, depend upon several circumstances, viz., the class and size of the snake, the part bitten, the character of this part, and the relation of that part to the snake immediately before at the time, and immediately after the

bite, i.e., while the snake was striking, while he was getting his grip, and while he was loosening the grip, a great deal having to do with movement of snake and limb, or movement of one of the two principal actors

Noi should we always expect to find two punctures, as the following will prove A pet cat of mine was once bitten in the thigh by a Krait, I could only see one wound, which I should like to specially remark was both lacerated and punctured, not the slightest indication of a second wound could be discovered, but on examining the snake I discovered that one fang was missing, probably broken off in a fight Another incident relates to the first Daboia I saw, which had three fangs, two on one side and one on the other, the two on one side had a common duct between them

Treatment—But apart from these facts, I think it most advisable that every case of snake-bite or reported snake-bite, should be treated immediately with that most efficacious chemical antidote, for which we owe our thanks to Winter Blythe—Potiss Permanganate Incise the parts freely in all directions, making fairly deep incisions, and apply the crystals of Pot Permanganate Make two lateral incisions one on either side If practical the part bitten should be submerged in a 5 per cent sol of K_2MnO_4 If a puncture can be discovered, it should be well opened up, the right direction being followed with a fine probe, the opening should then be packed with the crystals, after expressing as much blood as possible I always begin treatment with a full injection of adrenalin chloride The ligature I have always found useful Flight should be treated not only medicinally, but with as much moral convincing powers as are at command This is the procedure I adopt in all cases, but in colubrine poisoning in addition I resort to full doses of the polyvalent antivenine serum intravenously

I have made some rare and interesting observations on snakes and have had some strange experiences with them, both in captivity and in their wild state, but I have not as yet had either opportunity or time to complete a record of these facts, especially as—"owing to the exigencies of the service"—my residence in no one place has been for my considerable period Before concluding this article there are a few queries I should like to put, and I trust some others like myself interested in the snake problem will be good enough to throw some light on the subject

(a) About 80 per cent of cobras that I have dissected I have found to be males Is this due to the fact that the female cobras do not, or only rarely leave their homes and go out, or is it that the females are for some reason or other not as numerous as the males?

(b) Does the male snake take any part in the hatching of the eggs?

(c) Will a snake for no cause turn aggressive? I have seen all sorts of snakes under all

sorts of conditions and circumstances, and have always found them shy and reserved, yet from the histories, and legends one reads about the Hamidiyad you are led to infer, that his chief delight, nay occupation, is to attack most ferociously any living thing that comes in sight just for the love of the sport.

(d) Is the king cobra—except that he belongs to the colubrine group and is also called cobra—in any way related to the ordinary cobra, or does he belong to quite a different family?

(e) Do snakes ever mate with other than their own species?

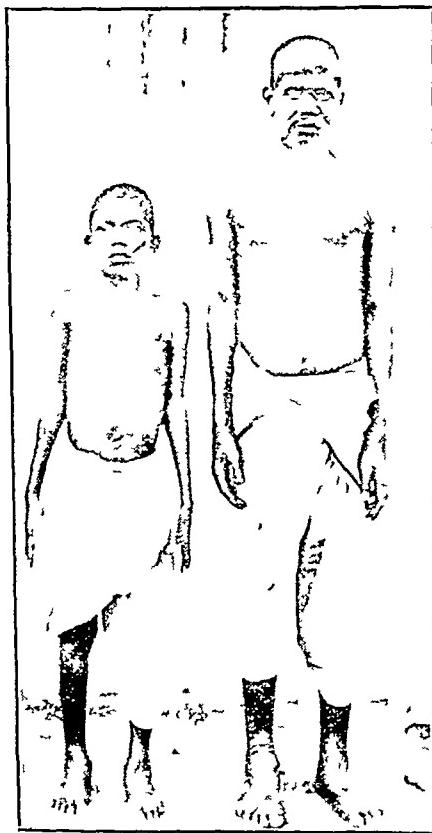
(f) Do two or more different species ever live in the same locality, i.e. are they ever very close and so to speak friendly neighbours?

A FEW NOTES ON THE NASTIN TREATMENT OF LEPROSY

By PREMANANDA DAS

Assistant Surgeon, Deoghar

DEOGHAR Leprosy Asylum is a private institution maintained by private charity. With the kind permission of Mr. Donald Sunder, S.D.O. the



A PAIR OF LEOPERS TREATED WITH NASTIN

Secretary to the institution, two cases were selected by me for Nastin treatment.

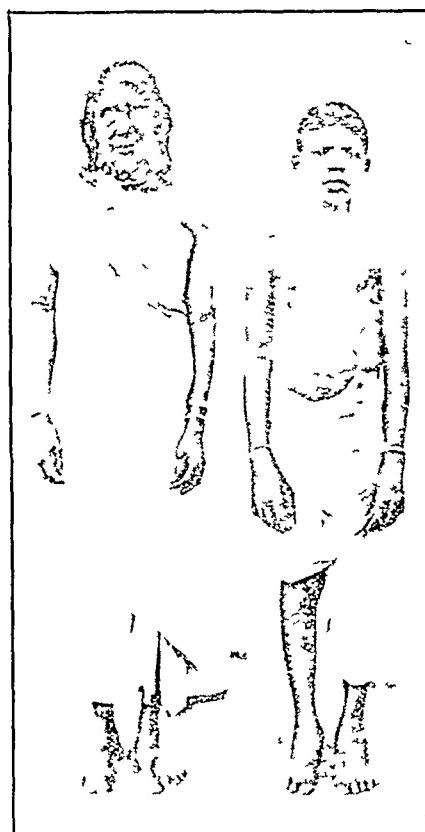
- (1) A case of Tubercular Leprosy
- (2) A case of Anaesthetic Leprosy

I—First pair treated with Nastin—

(1) Balai Pate, a Hindu male child, was the son of a leper. His father was a patient in

the asylum at the time of treatment. The boy had small leprous nodules all over chin, ears, face, arms back of thighs and buttocks and over the back.

First injection of Nastin B1 was given on 30th December 1910. He had a mild reaction on 31st December 1910, temperature rising to 99.4°F.



A PAIR OF LEOPERS TREATED WITH CHAULMUGRA OIL

Temperature kept normal till 6th January 1911 when second injection of Nastin B1 was given viz., after a week.

This was followed by a sharp reaction which manifested itself in general and local symptoms. The symptoms of systemic disturbance were fever, malaise, loss of appetite rheumatoid pains in the limbs. Locally inflammation of leprous nodules set in. Each leprous nodule presented the appearance of an inflamed acne-like eruption with surrounding inflammatory zone.

This was followed by softening and flattening of the nodules which gradually disappeared leaving brownish patches on a level with the skin.

There was no formation of vesicles or necrosis of the nodules. The symptoms of reaction commenced on 7th January 1911 and it was not until 23rd January 1911 that the temperature came down to normal without subsequent rise—the period of reaction lasted for about a fortnight.

The successive series of phenomena—Inflammation softening, dissolution and final disappearance of the leprous nodules occurred in the nodules over the buttocks, thighs, arms and back.

The nodules over the ears and chin were large and these though they did not disappear were distinctly flattened and thinned and showed a tendency towards disappearance.

(2) Beni Mandal, H M, 40 This was a case of anaesthetic leprosy. The patient had also thickening of the nose, face, ears. First injection of Nastin B was given on 30th December 1910 with the result that his temperature was 100° F. on 31st December 1910. Temperature all along kept normal after the second injection of Nastin B1 on 6th January 1911. No reaction developed. The man displayed no appreciable improvement in his symptoms or local lesions as a result of two injections.

II—Second case treated with Chaulmugia oil—

(1) Ghasi Paru He had on admission swelling and thickenings over the nose, ears, face, fingers and toes. Had also anaesthetic patches all over the back and thighs.

(2) Sankaria Masumat She had anaesthetic patches all over the back. Fingers were also anaesthetic.

In both these cases Chaulmugia oil treatment carried on by the officer in charge of the asylum for four months in the first case and for three months in the second case produced marked improvements. Thickenings disappeared, and sensation returned in the anaesthetic patches.

Remarks.—From the series of phenomena which I have personally observed in case No. 1, I have no doubt in my own mind that Nastin preparation acts energetically on the leprous nodules producing, softening and dissolution of the nodules. It is said that Nastin prepares the lepra bacilli for bacteriolysis, whilst Chaulmugia oil produces leucocytosis which helps bacteriolysis.

Owing to multifarious official duties, I regret that the time at my disposal did not permit me to carry on and continue the treatment. The asylum is also located about two miles away from the hospital. I hope to publish the results as I carry on the treatment in the asylum and outside.

A CASE OF GENERAL PARALYSIS

BY A COCHRANE, F.R.C.S.,

MAJOR, I.M.S.,

Supdt., Central Asylum, Agra

THE following is the report by Dr Ford-Robertson Pathologist to the Scottish Asylums, upon a piece of cerebral cortex, taken from a patient who died in this asylum, in December 1910.

"The section shows well-marked though not very extensive peri-arteritis, the affected vessels contain in their walls aggregations of lymphocytes, and numerous plasma cells. There is well-marked hypertrophy of the menaglia in the first layer of the cortex, the nerve-cells do not retain

the stain owing to the method of fixation (bichromate), and, it is, therefore, impossible to say to what extent they exhibit morbid changes.

The vascular changes are those of G.P.I., and there can be little doubt that the case was one of this nature—two microscopical preparations are sent herewith."

Dr Wm Reid, Medical Supdt of the Royal Asylum, Aberdeen, in forwarding this report writes—"The report and microscopical preparations seem quite conclusive, especially when one considers the patient's history, which was that of a general paralytic.

The case shortly described below, and to which the above refers may then be definitely said to have been one of general paralysis, despite the patient being a native and a whole-life dweller in India and in the absence of the usually described macroscopic findings. As regards the absence of macroscopic evidence, G H Schwein, in the "*Journal of Nervous and Mental diseases*" (December 1910), describes three cases, in which the microscopic evidence of G P I was clear, while *post-mortem* macroscopic findings were absent, he concludes with a plea for histological study of all cases of suspected paresis coming to autopsy.

With regard to general paralysis occurring in Natives of India, Major Ewens in his book '*Insanity in India*', 1907, writes—

"This disease is, like tabes dorsalis, unknown among natives of India." In the *I.M.Gazette*, January 1911, Capt Heffernan I.M.S., describes a fatal case,—a Pariah in Madras with *post-mortem* and microscopical findings—which leave little doubt as to the correctness of the diagnosis, and he further quotes three cases diagnosed as paresis in the Rangoon Asylum.

Col Harris, I.M.S., in his annual report of Bengal Asylums for 1910, says "During thirty years' experience in India, I have only seen three genuine cases of general paralysis, one, in a Hindu, one in a Cabuli, and one in an Armenian."

I now append a short history of my case.

Name, Zahruddin, aged 38, Mohamedan, and Police-Court Interpreter, was admitted on 17th January 1909, no history of syphilis or alcoholism.

Symptoms.—Boasting and familiarity, with general excitement. Comprehension, cognition, memory, and orientation good.

Signs.—Speech clear, pupils regular, react to light slowly, no tremors.

Writing and walking natural, knee-jerks absent.

On 8th March 1909, he was discharged free of symptoms, but with signs unaltered. On 17th August 1909, he was readmitted with a return of symptoms, and the signs now were—

Speech, a little slurring, pupils, regular, contracted, react very sluggishly.

Tremors of tongue and facial muscles, of lips and fingers Writing, normal.

Walking, jerky and staggering, knee-jerk, absent

On 5th April 1910 the condition was of more marked tremor, and his writing now showed this. Speech had become more difficult, so that words were slowly produced and jerked out, though apparently robust he was weak and could walk with difficulty owing partly to feebleness and partly to inco-ordination, he appeared depressed, boasting only when led on to do so, memory had rapidly failed and was now almost absent except for faces and a few names, comprehension, cognition, and orientation were bad Wasserman reaction in blood, positive On 17th November 1910, condition was one of marked dementia, tremors of tongue, face, and extremities marked, he could barely blurt out his name; was unable to walk owing to incoordination, held a pencil with difficulty, but was able to write his name, the writing showing much tremor and "missing out" of syllables, pupils were quite fixed to light, he was still stout but obviously very weak, the bladder at times had to be catheterised, motions passed under him but no paralysis of bowels 20th November 1910, died of asthma, bed-sores developed the last three weeks

Examination of the skull and contents showed a thin, very dense skull cap—dura mater and arachnoid thickened and tough, not adherent to skull or to pia mater, except along middle line of vertex pia mater, thickened, adherent to that of opposite hemisphere but not to brain substance—cerebro-spinal fluid, in much excess Brain, distended and with congested surface, grey matter, not compressed or wasted, cavities distended with fluid Arteries, not thickened or thrombosed, no gumma or syphilitic change, no area of softening

month The voice had been altered from the beginning and latterly there had been some difficulty of respiration The chief complaint was the alteration of voice, which practically rendered him useless as a drill instructor.

On laryngoscopic examination a globular tumour about the size of a large pea could be seen below and to the posterior end of the left cord, it was freely movable and only occasionally came into view The colour was pinkish with a small yellow area on the upper surface The movement of the left cord was slightly impeded with a little thickening in the anterior third

An incision was made from the middle of the thyroid cartilage downwards and he stopped breathing, the trachea was rapidly opened and with artificial respiration he recovered The application of cocaine and adrenalin to the larynx caused a great improvement in the respiration The division of the crico-arytenoid not giving enough room the lower third of the thyroid cartilage was divided, the tumour seized with toothed forceps and snipped off with scissors, what remained of the pedicle was twisted off and a small piece of cartilage came away with it, the crico-arytenoid were sutured with iodine catgut The tumour was globular with a boss on it which was the yellow area seen with the laryngoscope Microscopically the tumour was mainly fibroid in nature with intact epithelium

The wound healed readily, and the cords moved well eleven days after operation when the voice was husky, but less so than before. A small mass of granulation tissue at the original site of the tumour was first seen 25 days after the operation and the cord on this side was inflamed The tumour and the redness of the cord slowly disappeared under applications of silver nitrate, but there was still thickening of the cord nine months later, but after two months had passed the voice was practically normal

Fibromata of the larynx are not very rare but the subglottic situation is uncommon

The points which led to the selection of thyrotomy instead of an endo-laryngeal operation were the situation of the growth, the lack of suitable instruments and also of personal experience of the latter operation

Case II Left cæcal hernia—S, Hindu male, admitted with a laigish left inguinal hernia of two years duration The upper parts was reducible, leaving a globular mass below, which was separated from the rest of the hernia by a very definite constriction, some third of the way from the bottom of the scrotum This mass gave the impression of a rather lax hydrocele, in fact, I diagnosed it as such before operation On opening the sac in the usual position, coils of small gut were at first readily reduced and then appeared to be adherent to the bottom of the sac, enlarging the incision downwards, the

A Mirror of Hospital Practice.

SOME SURGICAL CASES

By E OWEN THURSTON, F R C S,

MAJOR, I M S,

Civil Surgeon, Bengal

THE few cases detailed below appear, mainly on account of their rarity, to be worthy of publication—

Case I Fibroma of the larynx—R B R, Hindu male, æt 42, a Havildar of the Constable Training School at Nathnagar

His illness began with cough and a little blood-stained expectoration a year before admission to hospital The cough lasted for six months but the expectoration ceased after a

intestines were pulled out and the globular mass was found to be a very large cæcum and a small part of the ascending colon. Reduction being impossible without slitting up the canal very widely, the cæcum was punctured with a scalpel and a large quantity of semi-solid faeces evacuated, after closing the puncture with a double continuous silk suture there was no difficulty in reduction and the radical cure was completed.

The after-history of the case was uneventful.

Right cæcal hernia are common in Indians as I have pointed out in a previous paper (*I M G*, Sept '05), but have not met with one on the left side before.

Case III Recurrent volvulus of sigmoid flexure—N. A., Mahomedan male, æt 55, gave a three days history of sudden onset of abdominal pain after a hearty meal of raw "bhut" followed by absolute constipation, there had been no vomiting. On admission the abdomen was distended chiefly below the umbilicus with intense pain and tenderness. There was the scar of a previous coeliotomy, and on looking up his old record, it was found that he had been operated upon by Lt.-Col. Sunder, I.M.S., in January 1906, for volvulus of the sigmoid the coil being untwisted then.

Cœliotomy through the old scar, was performed, a volvulus of the sigmoid flexure was found, the twist being from below upwards and through a complete half turn. The loop was untwisted, the proximal loop was faintly small but gangrenous, and the distal large flabby and on the verge of gangrene. The mesentery had a very narrow neck, and here two loops of small intestines were adherent to each other. The coils of small intestine which had been in contact with the strangulated portion were intensely congested, but there was no lymph or fluid in the abdomen. The sigmoid flexure was excised, the distal end closed and the proximal sewn to the lower end of the incision to form an artificial anus, there was good deal of difficulty in this owing to the length of gut available being short. During the suturing the abdomen was copiously irrigated with boiled water. The progress was satisfactory for three days when distension appeared, and on the sixth morning was so great that the stitches securing the colon to the wound gave way and small gut protruded, this after puncturing and suturing was replaced. Death took place that evening. Looking at the case afterwards it would probably have been better surgery to have performed a cecal coeliotomy and at a later date to have made an artificial anus in the descending colon, an anastomosis between large gut and the rectum was impossible. Eating a large quantity of raw "bhut" or badly cooked "sag" appears to be one of the most frequent exciting causes of volvuli either of the small or large intestine.

Case IV Faecal fistula following strangulated hernia—B., Hindu male, æt 21, a right reducible inguinal hernia had become strangulated six weeks before admission, no operation, a faecal fistula formed 15 days after onset of strangulation. Admitted with fistula at the bottom of scrotum, discharging small gut contents; no stools per rectum. Coeliotomy through right semi-lunar line, a loop of small gut going down to internal ring, no peritoneal adhesions, the two parts of the loop were of much the same calibre. The loop of gut adherent to the ring was clamped and divided and the portions leading to the fistula closed with a continuous Czerny-Lembert suture, plus a continuous peritoneal suture above and an end to end anastomosis of the other portion of the gut performed by the same method. The bowels were opened by calomel on the third day after which they acted spontaneously. A slight mucous discharge from the fistula persisted, but considering the likelihood of this ceasing by itself, no further operation was performed. The absence of peritoneal adhesion appears to be unusual.

Case V Foreign body in bladder—M., Hindu, æt 20. Complained of pain in micturition with passage of blood for one month. On passage of a steel sound a rough grating sensation was experienced in the prostatic urethra. When examined again under an anaesthetic this grating was absent from the urethra, but the sound rubbed against what appeared to be a rough patch on the bladder wall. After injecting some fluid a lithotrite was passed and a piece of thin wood $\frac{3}{4}$ inches long was grasped at one end and withdrawn, there was a small quantity of phosphatic deposit upon it. The patient's explanation was that a ghost had put it there.

Case VI Osteitis and ankylosis of jaw—G. N., Hindu male, æt 20. Eight years before admission he had an attack of fever followed by ankylosis of the jaw and swelling of the right half of the face, the swelling gradually increased. Two years later sinuses formed which were slit up and healed after six months. On admission the right half of the face was swollen. The swelling involved chiefly the lower jaw but extended as high as the malai. The skin was adherent and there was a good deal of inflammatory induration of the soft parts, resembling somewhat in shape, the front part of the parotid. There was a projection on the outer surface of the jaw about the situation of the bicuspid. The mouth could only be opened a quarter of an inch.

An incision was made along the lower part of the jaw which was cleared from the soft parts. A $\frac{1}{2}$ inch trephine was applied about the position of the second malai and a portion of bone $\frac{1}{4}$ inch in depth was removed, the bone was also trephined over the boss. The portions of bone removed were not very hard and of the

same structure throughout. The jaw was then completely divided at the level of the bicuspids with great difficulty and the mouth opened. The three last teeth were pointing directly inwards and were extracted without much difficulty and a wedge-shaped section of the jaw removed. The section showed uniform structure throughout, very firm cancellous tissue which could scarcely be designated compact with curved lines resembling those seen in a tree trunk on section. The portion of bone removed measured $1\frac{3}{4}$ inch vertically and $1\frac{1}{2}$ inch horizontally. The wound took some time to heal, and on discharge the movement of the jaw was fairly good.

The condition must be considered very rare. Mr. Rainger, of Calcutta, who examined the case, had seen nothing like it in his large experience of dental surgery, and I have not been able to find any references in the books available.

The causation is obscure, the teeth were normal, I fully expected to find a small central abscess at the situation of the boss, there was no history or any evidence of syphilis, and if necrosed bone had been removed six years before (of this there was no history), one would have expected the bone to return at least in part to its normal condition instead of the hypertrophy increasing.

Case VII—S. L., Hindu male, age 10. Penetrating wound of abdomen. Faecal fistula. About a year before admission he fell in a bamboo grove and a piece of bamboo entered the abdomen a little above the posterior end of the crest of the right ilium and emerged from the upper part of the left side of the scrotum. The bamboo was pulled out just after the accident and for a month all faecal matter escaped from the scrotal wound, by which time both wounds healed. An abscess then formed above Poupart's ligament on the left side which burst with an escape of faecal matter, and a portion of small gut prolapsed, since then no faeces have been passed by the rectum, but there had been an occasional discharge of mucus. The stools were usually formed and there was no marked evidence of imperfect digestion.

On admission the boy was fairly well nourished with an artificial anus situated just above the junction of the inner with the outer two-thirds of Poupart's ligament. The opening admitted a finger and a soft rubber catheter took a course to the right side of the abdomen and could not be persuaded to go in any other direction. A large injection per rectum did not appear at the artificial anus. After a few days treatment with intestinal antiseptics a median celiotomy was performed. A large hypertrophied coil of small gut going to the artificial anus was found lying deeply in the pelvis and was brought to the surface with considerable difficulty, no other adhesions were present. Neither the cæcum or sigmoid flexure could be brought into the incision, by traction on the

great omentum, the transverse colon was brought into position and having selected a portion as near the hepatic flexure as possible, lateral anastomosis by suture was performed between the two loops of gut. The colon was atrophied being half the size of the loop of small gut with the coats very thin, the outer peritoneal row of sutures was introduced with difficulty and an omental graft was applied to guard against infection.

The after-history so far as it went was satisfactory, flatus was passed regularly per rectum after the operation and seven days later a small blood-stained stool escaped by the natural passage, two days later a scybala motion was passed the same way. The artificial anus contracted considerably and was regularly plugged with wool to aid the passage of faeces in the correct direction, this procedure only partially succeeded, the major portion of the intestinal contents still passing by the artificial anus. Enemas per anus, however, usually succeeded in producing a stool and some motions were also passed naturally. My next step would have been the excision of the loop of gut from the artificial anus to the anastomosis, but the boy absconded some four weeks after the operation when further surgical steps were suggested. There is, I think, reason to hope that the artificial anus would gradually become less active. The entrance scar was roughly an inch in length proving the bamboo was large and the patient may, to say the least of it, be considered extremely lucky to have escaped with his life, the absence of multiple peritoneal adhesions is also extraordinary.

PUERPERAL ECLAMPSIA WITH RECOVERY—THE MORPHIA TREATMENT OR ACCOUCHEMENT FORCÉ

By L G FISCHER,

Lt Col, I.M.S.,

Civil Surgeon, Dehra Dun

THIS case of Puerperal Eclampsia is reported on account of its comparative rarity in private practice, on account of its extreme severity followed by complete recovery, and thirdly because it illustrates well the line of treatment recommended and followed at the Rotunda Hospital, which, however, proved unavailing, had not recourse been had in the end to accouchement forcé. I shall reserve a few remarks I have to make and shall first give briefly an account of the case—

Mrs K.—Primipara, $7\frac{1}{2}$ months pregnant, had suffered a few days previously from swollen feet, but on examination of the urine shewed no albumen, and she seemed in excellent health, except that she suffered from headache of a rather severe nature, which, however, was not considered significant as she had all her life been a martyr to

headaches, which were apparently of nervous origin. It may be noted, however, that with the idea of sustaining her strength she had throughout her pregnancy been in the habit of taking meat at least twice a day. I was first called to see her on the afternoon of January 8th, her husband reporting that she had just had a fit. I went immediately with him, and found her lying in a somewhat dazed condition, but quite unaware that anything unusual had occurred, though complaining of very severe headache. I waited and very shortly a second seizure occurred—the eyelids twitched, the eyes rolled, the muscles became stiff, her face became of a bluish red colour, her chest became fixed, her back stiff. This was followed by violent clonic spasms, the legs as well as arms jerking, and this stage was followed by a condition of coma of short duration, and the patient came to. In a word the seizure was a typical eclamptic fit. I proceeded to follow out the lines of treatment recommended at the Rotunda Hospital, and injected $\frac{1}{2}$ grain of morphia sulphate with $\frac{1}{100}$ grain of atropine hypodermically. An hour later the patient suffered a third seizure and $\frac{1}{2}$ grain morphia with $\frac{1}{100}$ grain atropine was injected two hours after the first dose and 2 hours later again this was repeated. She slept now for a time, but had two seizures during the night. In the morning she was quite conscious, though complaining of severe headache. During the 9th she remained free from fits, though no nourishment of any description could be retained, water alone remaining in the stomach. Urine was passed in considerable quantity during the day, and this on analysis shewed a large percentage of albumen, with granular tube casts. Towards evening the patient was again convulsed (this was her 6th seizure), and after this attack the coma became profound, and the condition grave. After repeating the morphia treatment I summoned Major Birdwood, M.S., from Mussoorie. He came immediately and found the patient still comatose. Saline injections were made in both breasts, the stomach was washed out with the long tube, a large dose of calomel and jalap instilled, and the bowels were thoroughly emptied with repeated enemata. This treatment resulted in the patient recovering consciousness and she slept well from 11 P.M., and woke conscious. During the day of the 10th she vomited five times, but had no fits, and during the night she vomited frequently. On the 11th she was able to retain milk and water in small quantities, and in the night she vomited once, but slept well. On the 12th she retained milk in small quantities and a little thin bread and butter, but in the night severe headache returned, and she slept little. On the day of the 13th severe pain in the head and neck was complained of and vomiting occurred several

times. On the night of the 13th vomiting was frequent, and again during the 14th no nourishment could be retained, even peptonised milk one teaspoonful at a time being retained. On the 15th she was in the same condition but the pulse, hitherto good had become irregular. At 7.30 P.M. of this day another eclamptic seizure occurred which lasted five minutes. I repeated the morphia and atropine injections when after a prolonged period of coma, sleep was obtained. During the 16th she was fed by nutrient enemata and towards evening had a convolution of a very severe nature from which she fell into a condition of profound coma. It was evident now that it was useless to go on with the morphia line of treatment, and that as the uterus had remained absolutely inactive throughout labour must be induced, though even this appeared to afford little hope. The foetal heart sounds were still audible, there was no sign whatever of uterine contractions and the os uteri remained undilated, whilst the patient's pulse was rapid and intermittent. In consultation with Major Waltey M.S., I decided to induce labour, and at 11 P.M. on the night of 16th, or 8 days after the commencement of the illness, I dilated the os uteri with metallic bougies, introduced three gum elastic catheters and plugged the vagina, at the same time giving a hypodermic injection of ergotin. At 2 A.M., slight contractions could be felt, but an hour later the end seemed at hand. The patient lay unconscious, breathing feebly, the pulse rapid and intermittent, and at times imperceptible, and we agreed that the case was now hopeless, and that it was only a matter of time. At 5 A.M., profuse perspiration occurred, the pulse improved, some contractions were perceptible in the uterus and to our astonishment it appeared that the patient had rallied. At 8 A.M. with the arrival of Major Birdwood, M.S., from Mussoorie, it was found possible to introduce a Barnes' bag. The patient's condition, although she was still completely unconscious continued to improve, and at 3.20 P.M. she was delivered. The child survived for four hours. Nothing further need be said than that, beyond the fact that there was a period of mental weakness which lasted more than a week, the patient made a slow but uninterrupted recovery. She is now in England, and I understand from her husband is in perfect health.

Remarks.—It is stated in Rotunda Practical Midwifery, 1908.—“We do not advocate accouchement forcé in any form. We wait until the os is sufficiently open to apply forceps.” And again—“We prefer to treat our cases by less drastic measures than accouchement forcé.” In this case, however, the foetus remained alive, the uterus remained entirely inactive, and the os did not dilate in the slightest degree. Had I waited for the os to dilate the patient's life would

have infallibly been sacrificed. Induction of labour and emptying the uterus became imperative, and though it seemed at one time to be a hopeless procedure, yet in the end the life was saved by this measure, and I can most emphatically affirm that nothing else would have saved the patient's life. It seems therefore that one cannot adhere slavishly to the rules laid down for treatment in the Rotunda Hospital, and the only question which arises in my mind is, whether I should not have interfered earlier. No doubt "all's well that ends well," but in this case one cannot help thinking that had accouchement force been had recourse to earlier it would not have been so much "touch and go."

CASES OF FIBROMA MOLLUSCUM, REMOVAL OF A TUMOUR IN ONE WEIGHING 16 LBS 10 oz WITH RECOVERY

By C ROCKASAWMI CHETTI,

1st Grade Sub Asst Surgeon, Bassein, Burma

CASES of Fibroma Molluscum being rather rare, notes of the following case of a woman, with a big heavy tumour on the back of the head hanging down to the hip, will be of interest.

Mah Nit U, a Burmese woman, aged 38, living in a village called Thayagoung, Yegyi Township

of the tumour, that she begged from the villagers for her passage and came to hospital on 12th February 1910, and got herself admitted. The patient, a fairly nourished subject, anxious looking, head bent forward owing to the weight of the tumour, was covered all over her body with small tumours and one on her back of the head hanging down to hip. The tumour was fibrous and tubular for about 5 inches from the attachment from the occiput and neck and the rest hard down to the end. No pain on pressure except the weighty feeling of the tumour. She stated that these tumours were from her childhood and the one on her back of the head was of the size of a hazel-nut when she was 10 years old and which in the space of 28 years assumed this big size reaching down her hip. The weight was so great that she had to keep her head bent forward just like a woman carrying a load on her back. The photo attached will better explain than my words. She is married, husband living. Has a daughter and a boy, 5 years and 2 years old, respectively. Both are healthy looking.

Heart sounds normal—Lungs Breath sounds slightly rough but otherwise normal.

Urinary system—Specific gravity 1015 Acid in reaction. No sugar or albumen. Phosphates present.



of the Bassein District, hearing of the many operations performed at this hospital, was yearning to get herself admitted for the relief of her malady. But she was too poor to undertake the journey as she had no money to pay for the passage. Her life being so miserable on account

Digestive system—Tongue clean Bowels costive Appetite good

Operation—On the 18th February, 1910, I operated on her. I made an anterior and posterior incisions, reflected the skin for flaps. The tumour was extremely vascular, so all the bleeding

vessels were ligatured. It was attached to the periosteum of the occipital bone radiating like a fan. I passed two stout silk ligatures on an aneurism needle, one above and the other below, near the attachment, tied and removed the tumour. The flaps were brought together with silkworm gut sutures. The patient was under chloroform for over an hour. She suffered from a certain amount of shock and made an uneventful recovery. She returned to her village highly pleased having been relieved of her great burden from her back.

Case II—Maung Tha Doe Aung, a Burmese male, aged 46 years, coolly by occupation. His whole body is covered with small tumours. None so big as to inconvenience him. He stated

do not find it mentioned anywhere that the disease is hereditary.

Wagan Jan Bibi, aged 45, came as an outpatient, complaining of the inconvenience and unsightly appearance of the growths depicted in the photograph, also of feeling weak and ill.

History—She has had the growths for 5 or 6 years. They began on the top of the head and have steadily increased both in size and number. One or two of them have recently become ulcerated on the surface.

Her mother, three sisters and one brother were all affected, but not so severely as herself. Her grandmother was not affected. Her grandfather she does not know about. She has three sons and one daughter. One of the sons is affected.



that these small tumours on his body are from infancy.

A CASE OF MOLLUSCUM FIBROSUM

BY L. B. SCOTT, M.D.,
CAPTAIN, I.M.S.

THE case of which I send a photograph is remarkable, not only for the extreme development of the disease, but also for the family history. I

All these relations have the disease on the head and face only.

Condition—The top of the head, forehead and the sides of the face in front of the ears are covered with many large irregular growths, many of them pedunculated. There are smaller ones over the rest of the scalp, at the sides of the nose and beneath the chin. There are several large sessile growths on the back and a few small ones on the chest and arms. She refuses all operative treatment.

Indian Medical Gazette

NOVEMBER

A FUND FOR MEDICAL RESEARCH IN INDIA

THE third issue of this new quarterly *Paludism* devoted to the study of Malaria in India was not received till near the middle of September

It opens with an appreciative notice of the loss sustained by the Central Committee for the study of malaria by the death of Lt-Col J T W Leslie, CIE, IMS, the President of the Committee

The editorial note makes the important announcement of the setting aside by the Government of India of the sum of 5 lakhs as an *Indian Research Fund* to be devoted to research in connection with sanitation

The primary object of this fund (we are told) is to assist the policy which for several years past has been followed in India of "making a direct attack upon certain of the more important epidemic diseases" Research, we must all admit, is the starting point and basis of this policy, and nowadays we have in the numerous Laboratories and especially in the Central Research Institute in the Malaria Bureau, and in the coming Tropical School, the means of doing research work in a way that no other country will be able to equal. For carrying out the objects of this Fund an Association has been formed consisting of temporary and permanent members, the control being vested in a Governing Body. The proposals approved of by the Governing Body will be carried into effect by the aid of Working Committees of which the Malaria Committee is one. It is proposed to form Committees to organise and carry on study with regard to (1) Medical entomology, (2) vital statistics and disease, (3) cholera, (4) plague, (5) practical sanitation and schemes for model towns and other measures by which the efficacy of sanitation can be demonstrated to the public. At the time of writing the full sanction of the Secretary of State has not arrived, but no difficulty in that quarter is expected. There still remains a considerable amount of work to be done in settling legal points about the composition of the Committee, its power of spending capital as well as interest, and as the obvious need of inviting the public to subscribe to the Fund

This is a remarkable advance, and we congratulate the Government of India and the Head of the Medical Department on this great step forward. It is a grand and unique thing in India for a Research Trust to have funds in their control, and to be able to spend them on objects for the public good without the controlling and often delaying interference of financial departments

We have no doubt but that good results will certainly and soon follow and when these results are visible we have every belief that the Government of India will go further and give further grants *Quod bene bonum felix faustumque sit*

THE SUPPRESSION OF PLAGUE AND MALARIA IN INDIA

THE valuable memorandum written by the Sanitary Commissioner with the Government of India and laid on the table by the Hon'ble Member in charge of the Education Department in reply to a question asked in Council by the Hon'ble the Raja of Dighapatia is a document well worth perusal and attention

This memorandum in a very able way sums up the very considerable progress made in the prevention of plague and malaria, and shows the machinery at work in all the provinces for the continuance of measures for their further prevention

As this valuable document has been very properly circulated widely in the lay press, it is not necessary for us to reprint it in full

We have always felt that the Government of India have been too modest in advertising and making known the amount of work done in this country, and they have too often met in dignified silence, comments and criticisms, which have derived weight chiefly from the absence of reply

We are, therefore, glad to find that the Sanitary Commissioner calls (para 2) special attention to the fact —

"That to the action taken and to the discoveries made in this country not only India but the world in general owes almost the whole of the knowledge upon which efficient and precise measures against those diseases are everywhere based. As regards malaria it may be recalled, firstly, that the Cinchona enterprise of the Government of India, commenced more than 50 years ago, has been the chief means of bringing about such a fall in the price of quinine as to render practicable the policy of making the drug available to the poorest peasants throughout the world; secondly, that India was the first country in which an endeavour was made to mitigate

malaria among the poor by the plan of selling single doses of quinine for the smallest sum in general daily use among the people, and, thirdly, that to an officer of the Indian Medical Service (Sir Ronald Ross) belongs the credit of the discovery of the mode by which the disease is contracted and spread, and therefore the discovery of the precise measures by which alone its eradication is possible. As regards plague we may recall firstly the discovery and provision of an effective mode of protection in inoculation, secondly, the attainment of exact knowledge regarding the part played by rats in the epidemiology and endemiology of the disease, and thirdly, the discovery of the mode of infection and conveyance by means of the rat flea, which has led to the abandonment of many useless and very troublesome measures, previously considered essential, and has rendered it possible to name accurately the particular methods necessary for the avoidance and prevention of the disease."

As regards present and future measures we read as follows —

"The measures which are at present being taken for dealing with malaria are based upon the recommendations of an Imperial Conference on the subject which was held at Simla in October, 1909. The Conference considered that the first step in a satisfactory and widespread endeavour to deal with malaria in this country should be the establishment of a permanent organisation comprising A Central Scientific Committee Provincial Committees A General Committee consisting of the members of the Central Committee and delegates from the Provincial Committees. The progress that has been made in the establishment and work of this organisation is fully described in Nos 1 to 3 of the publication "Paludism" which is laid on the table. The deliberations of the Conference showed that a first essential in the campaign against malaria is a complete knowledge of all the circumstances connected with the disease in different localities and to secure this it was arranged, early in 1910, that each province should be given an opportunity of training a number of officers and subordinates in modern methods of malaria research. To this end there was established at Kasauli a Central Malaria Bureau, containing a museum, laboratory and reference library, and at Amritsar a house was secured which serves as a permanent laboratory for malaria investigation and teaching. At the latter place three classes of instruction under Major Christophers, I.M.S., have been held, the number of officers and subordinates who have attended them being 48 in all. The next step was the appointment in the different provinces of specially trained officers and subordinates whose sole duties are in connection with malaria. These officers are provided with adequate working staffs and tour from place to place investigating the disease and assisting in its prevention."

This memorandum then goes on to detail the recently instituted arrangements for dealing with malaria in all the Provinces of India—in Madras, Bombay Bengal, United Provinces,

Punjab, Eastern Bengal and Assam of Burma and the Central Provinces

Another paragraph shows forcibly the great success of the carefully devised measures for preventing malaria among the Indian troops and among the prisoners

In the five years ending 1893 the admission rates for malaria were 467 per mille for troops and 393 for prisoners, in the five years ending 1908, these rates had been reduced to 228 per mille for sepoys and 199 per mille for prisoners

We need hardly follow the Sanitary Commissioner in his account of the well-known inquiries and investigations done in India with regard to the aetiology of plague. The methods of prevention have been clearly established in India, but their success will and must entirely depend upon the extent to which they find favour with the people, and here is the grand opportunity in the educated classes of India.

We may conclude this notice by the following quotation from this memorandum of the Sanitary Commissioner —

"Since 1908-09 a recurring grant of 30 lakhs of rupees has been made from Imperial revenues for improving sanitation in the different provinces with special reference to plague, and in 1910-11 a special non-recurring grant of 57 lakhs was made from Imperial revenues for expenditure chiefly on drainage schemes likely to improve malaria conditions in towns. It is hoped to discuss schemes of urban sanitation at a Conference of Sanitary Commissioners which will be held in Bombay in November of this year.

"It is felt that, although the very important discoveries and the vigorous prophylactic efforts that have been made in India have resulted in a very accurate knowledge of the measures necessary for the control of malaria and of plague, even a modicum of success in effective prevention cannot be hoped for, unless the people themselves are willing to co-operate whole heartedly in the campaign. It is thought that this active co-operation will not be secured until the people have learnt to understand and to have faith in the principles on which the measures are based, and that their education in these matters is a primary and essential condition of success. In this connexion it should be borne in mind that the history of epidemic plague is that it occurs among human beings as this. Plague occurs among rats in a house. So soon as rats begin to die, they at once migrate from the infected spots. The rats having been attacked by plague migrate from the house, but they leave behind them their nests, and in these nests they leave a large number of rat fleas which contain plague bacilli owing to their having sucked blood of infected rats. The rat flea ordinarily will not bite human beings, but when it becomes hungry it thinks a human being is better than nothing, it comes out and bites human beings and they become attacked by plague. The question of the prevention of plague is therefore

chiefly one of domestic hygiene, and one way to prevent plague is by teaching the public that they should not allow collections of rubbish about their houses, behind which rats can build their nests. They should be taught also not to throw about in the vicinity of their houses remnants of food which will attract rats, and in fact every precaution should be taken to prevent the rat from becoming a domestic animal. The rat is not a domestic animal in the houses of Europeans, but it is a domestic animal in the houses of a large number of Indians. What is wanted is to educate Indians up to this particular point as regards malaria, reference is invited to the speech by the Hon'ble Moulvi Ali Chaudhuri at the Imperial Malaria Conference in which he said 'whatever measures might be adopted the best and never failing method will be to educate the people. It is absolutely necessary to educate the young and the old on this subject by means of lessons introduced in the school books and by leaflets, health series and popular lectures.'

"Just as in the case of plague the co-operation of the people is necessary for the eradication of the disease, so it may be pointed out that the attempts of Government to stamp out malaria are frequently nullified, owing to the fact that individuals persist in allowing old pots, gurrahs, kerosene oil tins, etc., to accumulate in their compounds and thus furnish breeding-places for mosquitoes. If our campaign against malaria is ever to be crowned by success, it is essential that the efforts of Government should be supplemented by individual endeavours to secure sanitation in and around the household."

We commend this document to the study of the public and of the critics in Europe. It will long remain a landmark and record of progress, and is an earnest of the good work being done by the Government and the Medical Department in India.

Current Topics.

THE KING'S PERSONAL STAFF

THE Governor-General in Council is pleased to direct the publication of the following Royal Warrant, dated the 8th August 1911, amending the rules for the promotion and precedence of officers of the Indian Medical Service which were published in Department of Military Supply Notification No 27, dated the 24th April 1908 —

GEORGE, R. I.

WHEREAS we deem it expedient to amend the rules for the promotion and precedence of Our Indian Medical Service

Our Will and Pleasure is that Our Warrant of the 13th March 1908 be amended in accordance with the following provisions —

(1) The following shall be omitted from paragraph 10

"An Officer below the rank of Colonel, who may be appointed as Our Honorary Physician or Surgeon after retirement from the Service, shall be granted the honorary rank of Colonel"

(2) The following shall be substituted for paragraph 14

"Six of the most meritorious Medical Officers of the Service on the Active List shall be named Our Honorary Physicians, and six Our Honorary Surgeons. An Officer shall relinquish the appointment of Honorary Physician or Honorary Surgeon on retirement"

Given at Our Court at St James's this eighth day of August 1911, in the Second year of Our Reign

By His Majesty's Command,

CREWE

THE importance of the above modification of the Royal Warrant is that the six Honorary Physicians and six Honorary Surgeons are in future to be chosen (after the present holders have relinquished the appointments) from Officers on the Active List and not from among retired officers as has hitherto been the case (see first page of Quarterly Army List). These appointments will also be given up on retirement. This has been the rule in the R.A.M.C. and it is good to find it applied to the I.M.S.

OUR IGNORANCE OF DYSENTERY

IT must be confessed that we are still ignorant of dysentery. It is one of the great diseases of the tropics and responsible for more chronic ill-health than even malaria, much has been written about it for years, yet it cannot be said that we know definitely very much about the relative distribution of the two main types of dysentery, viz., amoebic and bacillary.

These thoughts have not been dispelled by a perusal of two recent valuable papers on this protean disease, viz., *Dysentery and Liver Abscess in Bombay* by Major E D W Gieig, I.M.S., and Capt R T Wells, I.M.S.,* and *The Dysentery Bacillus* by Major E R Whitmore (U.S.A.)

In the first place, the Scientific Memoir by Major Gieig and Capt Wells is not complete, and a "later report" is promised, which is not satisfactory to the practical medical man who wishes to get rid of dysentery in his jail or his asylum. We can only hope that this inquiry commenced in 1908 will be continued.

It used to be said that ordinary Indian dysentery was mainly bacillary, but apparently this is not so as regards Bombay. The very frequent presence of other intestinal parasite was confirmed in Bombay, the trichomonas being especially frequent. As regards variety, the bacillus dysenteriae of Shiga was found on 4 out of 13 cases, and in the remaining nine the bacillus of

* *Scientific Memoirs, India, No. 47 (1911), The Dysentery Bacillus*, E R. Whitmore, Major U S Army, Philip J of Sci., June 1911

Flexner None of these bacillary cases showed any indication of liver complication. The excretion of the bacilli is intermittent, and they cease to be found as soon as the stools became feculent and blood and mucus disappeared. The use of the sigmoidoscope is recommended in cases of bacillary dysentery as the lower part of the large intestine is most frequently involved.

The writers of the *Scientific Memoir* appear to think that there exists a sufficient amount of knowledge of bacillary dysentery to enable the sanitarian to intelligently apply the method of prevention, but except Major Foister's well known and practical work on dysentery we know of no work done which will give the practical man any clue to prevention and whether the present authors endorse, approve, or are opposed to Major Foister's views does not appear from this memoir.

Our authors rightly consider that there are many gaps in our knowledge of the amoebic infection, and we agree with them that the conclusions of Schaudin has been too rigidly accepted as final, for example the view that many free living amoebic may, in suitable culture, become transformed into pathogenic forms is still open to discussion. We cannot and need not here follow Major Griege and Captain Wells throughout the important series of experiments made by them—we can only quote their general conclusions which are briefly as follows—

1 Bacillary dysentery is rare in Bombay

2 Dysentery associated with amoebae is more prevalent

3 The amoebae can be cultivated from dysentery stools and liver abscess pus and can be grown outside the body in a suitable medium

4 The prevalence of amoebae shows a marked seasonal variation

5 The season of greatest prevalence of amoebae in Bombay corresponds to the season of greatest prevalence of dysentery, or shown by the rates of admissions for dysentery in Bombay jails

6 The amoebae cultivated in Bombay are not *ent histolytica*, or *coli*, but are the same or similar to those cultivated by Noc in Cochin China

7 That the same or apparently the same amoebae can be cultivated from tap water

8 That amoebae can be cultivated from the stools of large number of normal animals

9 That amoebae from cysts inside and outside the body, and that this cystic stage is important and cases cannot be considered cured till the stools are found to be free of these cysts

10 Amoebae may be cultivated from the faeces of persons suffering from abscess of the liver, although he at the time shows no signs of dysentery

11 That the evidence at present available indicates that water is a channel by which

amoebae of dysentery may be disseminated in endemic areas

12 A high leucocytosis may occur

13 A moderate leucocytosis if associated with rise of temperature may indicate hepatic invasion

14 That ipecacuanha, as pointed out by Rogers, will prevent the formation of liver abscess

It is pointed out that "growths of amoeboid organisms may appear in association with moulds and other bacteria by exposing plates of uninseminated Musgrave's agar to the air."

This disquieting observation certainly points to the need of further investigation being necessary.

The other article on dysentery which we have above mentioned is by Major Whitmore and the work was done in the Biological Laboratory, Manila, P. I. He gives a brief review of previous work and concludes that the "dysentery bacillus has been divided into four groups by the use of sugar media." He concludes as follows—

1 In an epidemic of bacillary dysentery with a high death-rate in Luzon it has been shown that the Shiga-Kiuse type of dysentery was the causative agent

2 At the same time the Flexner-Strong type of dysentery bacillus was found in some cases of dysentery around Manila

3 The bacillus Y, and the Strong type with which Leutz worked was not found

4 Great care is necessary in deciding types of dysentery bacillus from their reactions in sugar media alone

The above imperfect résumés of these two valuable monographs on dysentery will at least have shown that we are still ignorant of much about this variable disease. It is not yet known what is the ordinary type of dysentery—seen for example in jails, asylums, or in cases attending at the hospitals.

The subject is a vitally important one and demands continued investigation.

We have ventured to criticise the above valuable work from an entirely practical point of view. We read both articles in the hope of being able to get some clue to prevention, and we cannot say that in this respect we have been satisfied. We have nothing but praise for the high standard of scientific work shown in both the articles we have criticised.

THE TRANSMISSION OF GOITRE

We reproduce below the interesting note by Major R. McCarrison, M.D., M.R.C.P., I.M.S., Agency Surgeon, Gilgit, which was communicated to the Royal Society on 1st June last, on the experimental transmission of goitre from man to animals—

"Experiments had repeatedly been carried out on dogs to test the assumption that goitre could be conveyed from man to animals by faecal infection of the water

supply, but with negative results. In the present experiments female goats were employed. The drinking water supplied to these goats was fouled by passing through a specially constructed box, which contained sterilised soil mixed with the faeces of goitrous individuals. In the case of one batch of six goats, only this water was consumed. In the case of another batch of seven goats the box above referred to contained, in addition to the sterilised soil and faeces, 500 earthworms. These were added on the assumption that they might act as intermediate hosts to the infecting agent of the disease. The goats consumed this highly polluted water for 64 days, from October 13th to December 15th, 1910. The results observed were (1) a loss of weight, due doubtless to confinement in a small hut for the 64 days of the experiment, (2) that many of them suffered from diarrhoea, and (3) that 50 per cent of the animals showed enlargements of the thyroid gland, most marked on the right side. The thyroids of three control goats showed no alteration in size.

The enlargement of the thyroid was observed to fluctuate in size considerably, a fact which had previously been noted in the case of experimentally produced goitre in man. The average weight of the normal thyroid of the goat in Gilgit is 1/10,000 part of the body weight. The enlarged glands of the goat in the experiment were found to weigh from 1/4,272 to 1/7,000 part of the body weight. In both batches drinking fouled water the results observed were the same.

Microscopical examination of the enlarged organs showed varying degrees of dilatation of the vesicles, scarcity or almost complete disappearance of the masses of cells lying between the vesicles, while no alterations were observed to have taken place in the connective tissue stroma of the enlarged glands. The hypertrophy was due wholly to distension of the vesicle with colloid, and the formation of new vesicles from the intravesicular masses of cells. It is concluded that—

(1) An hypertrophy of the thyroid gland of goats can be induced by infecting the water supply with the faeces of sufferers from goitre. It is at present impossible to state whether this hypertrophy is due to the action of the infecting agent of goitre, or only to the organic impurity of the water thus contaminated.

(2) Earthworms do not appear to be concerned in the spread of goitre.

(3) The microscopical appearances described are the earliest stages in the formation of parenchymatous goitre."

SANDFLIES IN MALTA

In *Annals of Tropical Medicine* (August 1911) Mr R Newstead has a valuable report on the papatasi flies of Malta which in view of the prevalence of the newly differentiated fever in many parts of India is worthy of our attention. The important species are *P. papatasii* and *P. perniciosus*.

The breeding places of these insects are very difficult to find, as the larvae are so minute, but they appear to be found in holes and crevices in loose rocks and in caves, where the three conditions of presence of organic matter, slight moisture, and absence of light are found.

Though so evasive in their early stage these flies are found everywhere in the Maltese Islands, and they outnumber the mosquitoes and the females are among "the most vicious of all the blood-sucking Arthropods". As in the case of *psoroptes irritans*, these flies have their likes and dislikes, and many persons are quite immune to their bites but new-comers and especially

children suffer torture from them. Certain streets or blocks of houses are more often infected than others and groundfloor rooms rather than upper rooms. The neighbourhood of rocky ground and stone walls attract them.

The day-light retreats of these pests are in dark places, under garments, behind pictures, etc.

They can get through mosquito curtains, but the females when goaded with flood are unable to get out. They are frail and delicate animals and cannot stand a breeze, and the use of the Indian punka is recommended.

There is a seasonal prevalence, but this largely depends on variations in temperature, humidity and wind.

As for prophylactic measures, Mr Newstead recognises that "the task of suppressing them is an almost insurmountable one," but he makes several suggestions, and he quotes a prescription, for a "repellent" given by Major Crawford, R.A.M.C., which consist of Oil Amisi, one drachm, Oil Eucalypti, one drachm, Oil Terebinth, half a drachm, and Ung ac borac, one ounce. All dark portions angles, corners of a room can be sprayed with formalin (1 per cent solution) with a fine spraying apparatus, and mosquito curtains before bed-time should be sprayed with this solution.

Light is important, decorative drapery must be abolished, punkas and electric fans are certainly useful. Triaps may be used and as ordinary mosquito nets are useless, nets made of fine strong "chiffon" are needed, but are not practicable in hot weather.

Persistent efforts would be necessary to destroy their breeding grounds, but walls should be "pointed" and crevices in rocks and old walls filled up with cement, etc.

The rest of Mr Newstead's valuable article is taken up with the anatomy, etc., of the genus *phlebotomus*.

"LOW COUNTY FEVER OR DENGUE"

In *the Military Surgeon* (August 1911) Lieut C H Halliday, U.S. Army, has an interesting contribution to the still unsettled question of the identity of dengue with various types of minor non-continued fevers, described in Europe, India and elsewhere.

The "Low County Fever" described by Lieut Halliday has existed in Beaufort County, S.C. (U.S.A.), "from time immemorial" —

"It is characterized by sudden onset (preceded in about 50% of the cases by a chill), rapid rise of temperature, increased pulse rate, nausea and vomiting, moist and coated tongue, congestion of visible mucous membranes, headache, lumbar pain, muscular soreness, and pain in bones and joints of varying intensity. An eruption occurs in some cases and in the severe type epistaxis is often a troublesome symptom."

The extreme degree of prostration from the onset is remarkable.

Lieut. Halliday gives the following account of the aetiology —

Climate — The summer was unusually long, dry and hot, beginning early in April and extending well into November. Very little rain fell during the summer months. Late in September there were heavy rains which filled all ponds and depressions over the Island with water.

Mosquitoes — The mosquitoes were not numerous or troublesome until about October, when they greatly increased in number. The reports on collections of mosquitoes made from this post for the past several years show that *Culex fatigans* is only reported for the Fall months the period when this disease prevails.

Sex — The cases occurring on the post were all males, while those observed among the civilian population, both sexes were equally affected.

Age — The youngest case observed was in a child 5 years of age and the oldest in a man 60 years of age.

That the disease is propagated by the mosquito seems to be borne out by the fact that those cases occurring on the post were limited almost entirely to the men living in the barracks. These are temporary frame buildings, and owing to numerous cracks around doors, windows and in floors, it was impossible to effectively screen them. Each man used his net while sleeping, but this did not protect during the early hours of the evening. Only one case developed among the occupants of the officers' and non-commissioned officers' quarters. This was a line officer, whose duties required him to be out all day and many times at night, he being the only officer present for duty. No cases occurred among the Hospital Corps. The hospital is a modern brick building thoroughly screened. That there should have existed such an extensive epidemic among the civilian population is not surprising when it is known that no protection whatever against the mosquito is provided for by the inhabitants of this Island.

Blood Examinations — The colour index was not disturbed in any case. In all cases several smears and flesh specimens were examined at various stages of the disease for malaria and found negative. Smears from Cases 1 and 2 were also sent to Washington and reported negative from there. An eosinophilia was observed in the majority of cases.

Diagnosis — The seasonal period in which this disease prevails and the absence of cutaneous symptoms should serve to differentiate it from influenza. The absence of yellow fever from the States, the slower pulse, jaundice and hematemesis in yellow fever, will exclude it. The only disease with which it is likely to be confused is malaria and the blood examinations should clear this up. Should there be any doubt as to the correctness of the blood examinations made by the writer, the examinations at the Army Medical School Bacteriological Laboratory of smears from cases Nos. 1 and 2 should remove all doubt as to these cases at least.

Complications — No untoward results were observed in the cases admitted to the hospital. Two cases have been reported to me which suffered from a peripheral neuritis of both arms following the disease, and one case which was complicated by partial paralysis of the lower extremities which lasted for ten days.

Convalescence as a rule was rapid but in a few of the civilian cases it was prolonged they complaining of soreness of muscles several weeks after temperature had declined to normal.

Relapses. — Several of my hospital cases were readmitted and ran a typical course. Whether these were true relapses or reinfections I am unable to say, though I am inclined to believe they were in the nature of reinfection."

INOCULATION AGAINST PLAGUE AT NAGPUR

The following account of the value of inoculation against plague at Nagpur is well deserving

of study. It is written by Assistant-Surgeon V. N. Rege, we quote the following —

History of the epidemic — The plague broke out for the seventh time at Nagpur last year on the 8th of July. During this epidemic, which extended to the end of the year 1910, there were according to the municipal registers 7,859 attacks and 7,269 deaths. Out of these numbers only 180 cases and 129 deaths occurred before inoculation was commenced, leaving 7,679 cases and 7,140 deaths as the total number of attacks and deaths.

The outbreak assumed an epidemic form in August and reached its height in the week ending 14th October during which week the plague mortality was 1,126. The highest daily figures were 214 attacks and 202 deaths on the 6th October, and the monthly total for October reached the record number of 3,525. During the three months of greatest severity it carried away over 6,000 persons. Evacuation was freely resorted to, and nearly three fourths of the population left the town, but even in the health camps rat mortality was noticed and several indigo nurseries occurred. The total number of inoculations performed by the several inoculators during the last epidemic was the highest on record in Nagpur, viz., 22,347, while in 1906 the number did not exceed 1,478. This distinctly shows with what rapidity inoculation has grown in favour in Nagpur.

Inoculations at the Empress Mills — Inoculations at the Empress Mills were commenced under Colon. L. Andrew Buchanan, I.M.S., the Civil Surgeon, on the 16th of August 1909 and continued till the 6th of November 1910. A certain number were inoculated every alternate day, so that during the course of the epidemic the numbers of the inoculated steadily increased, while, on the contrary, the numbers of those not inoculated decreased.

"Khan Bahadur Bezonji Dadabhoy, the well known Manager of the Empress Mills, has been ever ready to give encouragement to inoculation and has thereby made preventive inoculation very popular among the mill employees, and by offering them inducements, such as the grant of two days' leave with full wages, he induced them to get themselves inoculated. My enquiry extended over eight weeks from the 21st of August to the 11th of October 1910, and was limited to the inoculations performed at the Empress Mills alone."

"The statistics thus collected may, therefore, be taken as trustworthy and the relative case incidence and case mortality among the un inoculated in the table given below may be accepted as reasonably accurate. The subjoined table shows in a clear and precise manner the relative protection from plague which may be expected from inoculation. It has been constructed from a summary of 551 investigation sheets referring to plague-infected households only. The figures are collected from household containing protected as well as unprotected members who were exposed to infection and among whom cases of plague subsequently occurred."

	Total number	Cases	Deaths	Case incidence	Mortality per cent	Case mortality per cent	Percent immunity from death of inoculated
Uninoculated	2,201	712	571	33.80	5.67	77.0%	
Inoculated { At Mills	752	71	10	0.81	1.3%	18.51	91.8%
	131	15	6	11.40	4.6%	40.0	82.35
Total of inoculated	883	89	16	10.08	1.81	17.07	99.95

"From the facts and figures given above we can come to the following conclusions —

- (1) that inoculation markedly reduces case incidence,
- (2) that it also greatly reduces case mortality,
- (3) that inoculation as such is quite harmless,

- (4) that it is also harmless even when a person is the incubation stage,
- (5) that the temperature reaction after inoculation is, as a rule, of a mild type,
- (6) that it has no bad after effects, and
- (7) that the attack of plague in an inoculated person is generally of a mild type.

I commend the above signs and the conclusions deduced from them for the careful consideration of employers of labour in our principal towns. Plague is more or less endemic in big towns. Past experience has shown that the epidemic has the worst results among the labouring population, who crowd in dingy ill ventilated localities. Evacuation on an adequate scale is in their case out of the question and even were it so possible it does not, without inoculation, afford the same degree of immunity as preventive inoculation even without evacuation provides. No preventive measure at once so cheap and so effective has yet been known to science as inoculation and I trust that the results of the Nagpur enquiry will convince our Captains of Industry of its striking advantages and persuade them to resort to it in time during an epidemic for conservation of labour and saving of human life."

RETURNS OF SURGICAL OPERATIONS

THIS is a question which has often been discussed and about which there is a difference of opinion especially upon what should be returned as a minor or a major operation, but we think there can be no difference of opinion on the following practical rules which have recently been issued by the Director-General, I. M. S. —

"With Government of India Home Department letter No. ^{6 Medical}₂₃₆₋₂₄₅ of the 14th March 1896, Rules were forwarded for the guidance of all concerned in the preparation of returns of surgical operations. The following rules stated the procedure to be followed in the case of multiple operations —

Rule 4.—In multiple operations of necessity, such as those in accidents, etc. the principal one is to be returned as the main operation and the subsidiary or secondary ones such as multiple amputations, setting fractures, reducing dislocations and others of like importance, may also be returned as separate operations.

Rule 5.—A second operation, performed on a patient when the first is surgically cured, should be returned as a separate one.

Rule 6.—All operations tending to the cure or relief of one and the same condition, performed on the same or any subsequent days, should be returned as one operation.

These rules are variously interpreted by medical officers. For example, an operation for curetting the uterus is shown by some officers as a single operation, and by others as four separate ones, e.g., douching vagina, dilating cervix, curetting uterus, plugging uterine cavity. Again in a recent case of placenta praevia, no less than 8 operations were shown, viz., plugging vagina, dilatation of cervix, puncture of membranes, version, podalic extraction, separation of placenta, plugging of uterus, and phlebotomy. Again, the incision of several boils, or the extraction of several teeth from one individual, are sometimes shown as separate operations in the case of each incision or extraction. Such cases evidently transgress the spirit of Rule 6 above quoted, and render the operation returns of the officer concerned of no value whatever as an index of the amount of work performed by him.

3 It is not possible to draw up hard-and-fast rules to govern all cases, it may occur that, in the course of an abdominal operation on the ovaries there is found to be also disease of the appendix, in such a case an appendicectomy performed at the time might fairly be

regarded as an operation apart from the primary ovariotomy, if, however, the removal of a healthy appendix was necessitated in the course of the general operation, as for adhesions, it would not be proper to return this as an operation for appendicectomy any more than the arrest of haemorrhage or closing of the wound.

4 Eye operations, again, are frequently returned in a manner which reflects little credit on the officer concerned. For example, a case of extraction of the lens was recently shown as three operations, viz., incision of cornea, iridectomy, and extraction of lens. On the other hand, the removal of a cataract, or of pterygium from both eyes, should be regarded as two operations.

5 It must be understood that the steps of an operation are not themselves to be shown as separate operations, and that the spirit of Rule 6, which is perfectly clear, is to be observed."

"PALUDISM"

APART from the important announcement about an Indian Research Fund the recently received issue of "Paludism" (No. 3) is full of matter valuable to all interested in the campaign against malaria.

We are very glad to see that the pioneer work done in India in the spread of the use of quinine is properly noticed, but in regard to Bengal we do not think that full justice has been done to the pioneer work of the Government of Bengal under the late Sir Charles Elliot on this matter. This beneficent work was started in Bengal and the other provinces soon followed. The piece packet system was invented in the Central Jail, Alipore, which, for many years, supplied many other provinces with thousands of packets yearly, and the Bengal Jail Department has shown its continued interest in the popularisation of quinine in India by having taken over (from 1st October 1911) the whole management of the distribution of the quinine manufactured for India in the Cinchona Factory in the Darjeeling hills.

As soon as the new plantations are in working order, we hope the Darjeeling and Sikhim Cinchona Gardens can be able to supply an enormously increased supply of pure quinine and that there will be no need for some provinces to import quinine from other countries. This is a Swadeshi enterprise which should be supported by all that have the interests of India at heart.

We hope that critics in England who are dissatisfied that India does not eagerly grasp at their panaceas will be brought to realise the good work which has been and more than ever now is, being once in India.

As we presume this valuable publication is widely circulated among our readers, we need to no more than refer to a few of the papers published. We may particularly call attention to the note on the selection of unit areas for recording data concerning malaria in India; to Major Kenrick's useful paper on the effect of endemic malaria on the birth and death-rate in the Central Provinces. He shows that it is in children that the intensity of the parasitic invasion is fatal and that malaria is usually

only an indirect cause of death in adults Lieut-Colonel Adie has an interesting note on malaria among the troops and native children in Delhi, and Major Penny reports on the work done in the Jeypore plateau near Vizagapatam Major Christophers writes on the identification of culicidae other than anopheles and gives complete identification tables Lieut-Colonel Adie's useful method of collecting adult mosquitoes is commended to all workers

Major Christophers has an interesting report on the existence of a localised centre of Kala-Azai in Golaghat Sub-Division of Sibsagar—an area just outside the limits of the spread of the great Nowgong epidemic of Kala-Azai These cases were discovered by Capt Morison, I M S, the Civil Surgeon, and it is satisfactory to see that this little outbreak has been so promptly investigated. Major Christophers has another article on malariometry—and the estimation of the size of enlarged spleens, which, we confess, is too mathematical for us to follow

This issue of *Paludism* concludes with brief reviews of many interesting papers and monographs on malaria

This new quarterly is improving in every issue and has become indispensable to malaria workers

ACCELERATED PROMOTION IN I M S

It must be admitted by all that the Director-General is doing and has done all that can be to remove anomalies and difficulties in the way of men qualifying for the accelerated promotion to Majors, I M S

The following extract from a despatch of the Secretary of State will show the latest concession on this matter—

"I approve the proposal that the sanction conveyed in paragraph 19 of my Military Despatch No 108, dated 2nd December 1910, be given retrospective effect and made applicable to—

(1) Existing majors of the Indian Medical Service who have not yet completed 16 years' service and have not been able to get study leave, and

(2) Majors of the Indian Medical Service who had already taken study leave and qualified for accelerated promotion while in the rank of major before completing 16 years' service"

We may expect some interesting readjustments of officers' positions accordingly

We have been asked if the opinion expressed by Lieut-Colonel Henry Smith, I M S, of Amritsar, in the discussion on sterilisation of the skin to the effect (as given in *Lancet*, August 12th, 1911, p 443) that "in India 50 per cent of the men have tetanus bacilli in the blood" is correct

We may certainly assume that Lieut-Colonel Smith has not been correctly reported. Tetanus is not a bacteræmia He probably

referred to Sir David Semple's statement that tetanus germs had been found in the faces of four out of ten healthy subjects examined

A CORRESPONDENT calls our attention to the following quotation from Williamson's *Oriental Field Sports Edition*, 1808 (Vol 1, p 251)—

"In many parts of Bengal the marsh fever is very regular in its attacks on all ages and never fails to carry off a large portion of the inhabitants I have known some villages where for many years not a single person escaped the fever, but which might have been averted by cutting a few drains to carry off the stagnant waters in due time It was not the business of any one particular person, and so consequently no one would do it"

This is a good instance of the existence of malaria fever in Bengal a century ago

The following extract from the Government of India Resolution on deaths from wild animals in 1910 is of interest—

"The total mortality amongst human beings caused by snake bite rose from 21,364 to 22,478 The greatest number of deaths as usual occurred in Bengal and the United Provinces where the figures were 7,767 and 5,436, as compared with 7,202 and 4,814, in the previous year, respectively The next highest mortality occurred in Eastern Bengal and Assam with 2,915 deaths The greatest variation in the mortality was in Bengal, the United Provinces and Eastern Bengal and Assam In Bengal the increase is particularly noticeable in the Tirhoot and Presidency Divisions The increase in Eastern Bengal and Assam is attributed to snakes being driven by high floods to take refuge in the raised village sites Both in this province and in the United Provinces a considerable number of cases were treated with the Brumton lancet and permanganate of potash, and a high proportion of them are reported to have recovered No reliable deduction can however, be drawn from the use of this lancet, owing to the lack of proof that the bites it was used upon were really those of poisonous snakes"

DR C WALKER (*J of Hygiene*, July 1911) has a valuable note on some experiments on the inoculation of marmosets morbi through the human skin by flea-bites His results "are at variance with the view which at present meets with most acceptance regarding the mechanism by which fleas transmit the disease" (plague) Certainly further enquiry is needed

DR J BURNET, of Edinburgh, writes in *Medical Press* (August 16th, 1911) to show that in his opinion Pellagra and Syphilis "are one and the same disease" He asks for criticism and further information

NOTICE—Will the officer who sent us an unsigned article on tetanus infection from an operation wound please send his name? We have the article in print for publication, but have not got the name of the author

REVIEWS.

Taylor's Practice of Medicine—Ninth Edition, 1911 London J & A Churchill

It is less than three years ago since this standard favourite of the medical student appeared in its eighth edition and now, August 1911, a ninth edition has appeared.

This ninth edition has been thoroughly revised and brought up to date, and a large number of new subjects has been introduced, e.g., chapters on pellagra, enterospasm, bacilluria, pneumaturia, etc., and considerable additions to the chapters on aphasia, hysteria, anaemia, diabetes, albuminuria, cholera and dysentery.

The latter chapters and indeed all those dealing with "tropical" diseases are up to date and accurate as can be expected in a volume on general medicine intended for students.

The old, old error of nearly all text-books, that chicken-pox "rarely attacks adults" is repeated. If the author had seen epidemics of chicken-pox in regiments or among prisoners he would know that chicken-pox in the tropics is very frequently a disease of adults and attacks them with such a wealth of eruption that cases have been pardonably mistaken for small-pox.

In the 21 years of its existence Taylor's Medicine has satisfied generations of students, it is bigger and bulkier than of yore, but it is the same practical and reliable book it has ever been.

Golden Rules of Pediatrics—By JOHN ZAHORSKY M.D St Louis, C V Mosby Co 1911 Price, \$2 50

THIS quaint and original book consists of aphorisms, observations and precepts on the science and art of pediatrics, and gives practical rules for diagnosis and prognosis, and also deals with the essentials of infant feeding and the principles of scientific treatment. Ever since the days of Hippocrates aphorisms have been a favourite mode of expressing the essential truths of medical science. It is not to be expected that all will agree with all the statements, but we agree with Dr Zahorsky in considering that aphorisms based on a wide personal experience are of considerable value.

To illustrate the nature of this book we may quote a few of the aphorisms picked out from various pages, e.g.—

1 Nothing is so variable as the appetite in children.

2 Always exclude hunger and thirst in a baby who cries incessantly.

3 Always palpate the abdomen carefully in every case of severe crying.

4 In a malarial region malaria is a more common cause of convulsions than eating green apples!

5 Teething alone is not a common cause of convulsion. Look for other causes.

6 The best tongue depressor is the handle of a spoon.

7 Always view an exudate on the tonsil with suspicion.

8 Remember, a diffuse redness of the skin occurs in many fevers, it is not punctiform as in scarlet fever.

9 Examine the ear in doubtful fevers.

10 Don't forget to examine the chest in all peritoneal irritations, a pneumonia or pleurisy is a frequent cause of "rigid abdomen".

11 The adenoid face is open mouth, base of the nose broad, listless, stupid appearance, stunted growth snores in sleep.

12 Remember that a mild catarrhal vaginitis is very common in girls, suffering from nutritive disorders.

13 It is a good rule to give antitoxin amounting to 1,000 units for each day the diphtheria has existed.

14 Always warn patients that serum urticaria and joint pains may appear any time within three weeks after the injection of serum.

15 It is useless to isolate other children when an eruption of measles appears—the others have already been infected. Measles is the most contagious of the exanthemata.

16 The treatment of measles is pure air, rest in bed and cold drinks.

17 The classical treatment of scabies by sulphur has not been superseded.

18 Equal parts of olive oil and lime-water will be found a serviceable application in all irritative lesions of the skin.

19 Use careful antisepsis in vaccination.

20 Never despair of a patient with scarlet fever. The most severe septic cases get well.

These are only a few of the shortest aphorisms in this original book.

The Reduction of Domestic Mosquitoes Instructions for the use of Municipalities, Town Councils, Health Officers, Sanitary Inspectors, and Residents in warm Climates.—By E H Ross 114 pp

NOTE the title and sub-title. The book is dedicated to Prince D'Arenberg and to Sir Ronald Ross, the latter of whom suggested writing it.

Domestic mosquitoes refer to *Culex fatigans* and *Stegomyia*, and those malaria carriers which happen to be in towns, and the methods of destroying them are those described long ago in "Mosquito Brigades," plus later experience. Such domestic reduction, however, includes only minor works. Major works, such as filling in of hollow-pits, marshes, pools, etc., are general sanitary measures. The object of reducing domestic mosquitoes is to ensure better health, and greater comfort in life by banishing malaria, dengue, yellow fever, and other febrile disorders.

The proper thing to do is to study what has happened in successful campaigns, such as the Suez Canal, Havana, Rio—you know them all.

Especially should the procedure at Port Said be carefully studied and copied. Port Said should be the pattern to work from. Mr. Ross himself had something to do with it, and any difficulties such as want of sanitary laws, apathy, opposition, prejudice, riots, etc., can be easily dealt with by a reference to Port Said.

Mosquito reduction is not difficult. Given the means, it only requires organisation and perseverance. As to the former, for the up-keep of a regular anti-mosquito campaign (which must be a permanent affair) 6d per head per year for towns of over 25,000, should do, but this must be increased if summer rains and impervious soils, or irrigated land interfere. Port Said cost that 6d, and see the results.

If you want to know what places are not to be taken as patterns, there are India (Mian Mu) and Egypt. Sir Ronald knows all about India. The author had heard of Mian Mir, and knows about Egypt. Both places get a belabouring with the Russian Cat-o'-9-tails. Don't believe that mosquitoes from an uncleared area will fly into a neighbouring cleared area. Such incisions do not spoil brigade work. That sort of objection is only raised by "lazy administrators" when the work has not been properly and sincerely carried out (Poor Mian Mu!). And it is sad to have anything to do with a Government which continues to regard mosquito reduction as a scandalous fetish, and when the death-rate of its capital is 40 (Poor Egypt!).

The book has admirable advice, hints and tips for mosquito reduction, and details are given how to estimate the amount of fever in a town, and the amount of surface water breeding mosquitoes, how to get together a brigade, how to work it systematically, how to recognise mosquitoes and larvae, and, most important, how to truthfully make periodical comparative statements of mosquitoes and sick-rates.

One or two matters attract notice. Culex is frequently split so palpæ for palpæ, P. V. Theobald for F. V. Theobald. Malaria carriers might be understood to be rural as opposed to domestic. That is not the case generally in India. Culex larvae when resting near the surface of the water are described as nearly perpendicular to it, and Stegomyia at an acute angle. This should be the other way about. At page 30 it is said male mosquitoes live only for a few hours or at most two or three days. This is not always so in India. Again, the spermatheca can just hold the number of spermatozoa to fertilise all the eggs in each brood. Surely a surplus is often met with and possibly a deficit. With regard to the enemies of mosquitoes, "a bird may gobble up the whole egg inst." The well-known "feeding brushes" of the larva are described as "swirling circulatory organs." The domestic mosquitoes are said to prefer dirty water for egg-laying. They, at any rate, are very partial to the clean drinking water of house-cisterns, chhattis, ghurrias, etc.

In connection with anti-mosquito operations and their results, Mr. Ross concludes by impressing on us the use of advertisement. "This is the age of advertisement, and advertisement has become necessary if any new project is to succeed or become generally known." Very true words. The general get up and illustrations are, of course, worthy of Murray's.

SPECIAL ARTICLES

I.

THE INDIAN MEDICAL SERVICE AND POST-GRADUATE STUDY (Communicated)

Several years ago a fairly senior man was dining in the mess of a regiment to which I was Medical Officer. After thoroughly enjoying both meat and wine he began to discourse on medical education and professional matters generally, winding up by saying to me, in the most genial manner possible, "my dear boy, you belong to an estete service. The I.M.S. has run its course."

His name I have forgotten though his memory still lingers. In those days I was young enough to attach a good deal of weight to the *ipso dictu* of a full-blown Colonel, a medical man to boot.

Fortunately, I was sufficiently well disciplined to accept this quite uncalled for attack from my guest without retort or argument, but I was a trifle ruffled though courtesy forbade my making any display of my feelings at the time.

When reading the July number of our Gazette, I somehow suddenly remembered this somewhat amusing episode of days gone by, and could not help wishing that my old friend had been near.

It would have given me a good deal of pleasure to point out to him the original work of Ross's and McCarrison's articles, and to refer him to the notes which show that quite a dozen men have been qualifying for the Fellowships in Medicine and Surgery and the Diplomas in Tropical Work and Sanitation, and that the last joined batch have annexed seven out of nine of the prizes awarded after competition. Not such a very hopeless month's record for the Service he considered moribund.

This brings me to the object I had in view in writing these few lines. We all know Government have recently introduced the privilege of so-called "Study Leave." As one who is just completing his twelve months it struck me that, perhaps, a few notes might be of use to others who are going to profit by this concession, one which I feel sure is going to have a much greater effect in improving the efficiency of the I.M.S. than those who originated the idea had any conception of. Apart from

the study necessary to qualify for acceleration of promotion, to attain which must now be the object of every junior, it will induce men to organize their work during furlough on more systematic lines than has been the case heretofore. In any case of this nature much more benefit is likely to accrue from planning out a definite course as far as that is possible beforehand. To do so it behoves the new arrival to study these leave rules carefully at a very early period in his career. He will find that he is permitted to have twelve months' special leave during his service, and that during that period he is entitled to a grant of six or eight shillings a day, according to his rank, in addition to his furlough pay. If I am not mistaken it is possible at a very early stage while still on the military side to get eight months' long leave and by another recent ruling the first three months of this can be privilege leave, i.e., leave on full pay. Later on it is comparatively easy to get even a longer spell of furlough, and that before you have reached the twelve year limit of automatic promotion. I am sure much the best plan is to divide the twelve months allowed into two lots. Utilize the first to qualify for the six months acceleration and keep the rest in reserve for your second go of long leave. This is permitted by the rules and when you are getting on in the service and have discovered your particular line you can use it in following this up. Personally I spent my first eight months in working up my Fellowship and doing some Tropical Medicine to occupy spare moments. During the second go of four months I found the daily batta distinctly useful in meeting the expenses of "special classes" each of which runs from one to three guineas.

In this same number, for July, a list is given of various Post-graduate Courses, and it might be helpful if I were to give a few impressions of my experiences at one of them that attached to the West London Hospital. The latter was the first in London to reserve its practice for qualified men, and the College was the earliest institution to be attached to a General Hospital. As a result it is as well organized as any of the others, if not better, and I can cordially recommend it to any of my brother officers who require a tonic. The post graduate courses are advertised weekly in the British Medical Journal, and a very useful prospectus is supplied on application to the Secretary.

There are three regular sessions during the year commencing on the second Monday's in January, May and October, and during these a regular course is given which is covered by the fee for attending the Hospital. But work need never begin or end with one of these as you are permitted to attend the routine work in the Wards and Out-Patient Departments throughout the year and there is hardly ever a day on which something is not going on in the Operating Theatre. One of the special features of this

course which appealed to many of us was that the lecturers in Medicine and Surgery invited the Post-graduates to note on a paper posted for the purpose any particular subject in which they were interested. Several took advantage of this and their suggestions were attended to punctiliously in every case.

A vacation course is held between sessions, and, in addition to these free classes, there are specials which are given if there is a sufficient number of students signing a request for them in each case. They cost an extra guinea or two each and were voted excellent value by common consent of all of us who attended them. Work began at 10 A.M. and ended with the last lecture at from 5 P.M. to 6 P.M. I made the mistake of taking too many specials at once with the result that I frequently put in six or seven hours a day and by 5 P.M. was too tired to assimilate much more. For one who has long leave it would be far better to spread them over two or more sessions. And it would be a still greater improvement if one could get right away for a spell between sessions, but this is not possible if you are qualifying for lodging allowance as the rules do not permit a break of over a fortnight. Occasionally after putting in a couple of hours say from 10 A.M. to 12 noon you found there was a gap till 2 P.M., and this was much more than was required for lunch. It was then that the comfortable smoking room proved such a boon as there was an excellent library attached to it and facilities for writing, etc., were provided in abundance. I have even seen a weary medico put in an hour's nap on the luxurios divan in one corner and am sure he digested his next lecture much better in consequence of the rest. Tea is served in this room for a nominal sum from 4 P.M. to 5 P.M., and enabled one to go straight from operating theatre or clinic to the 5 o'clock class held in the adjoining lecture hall. Here also the arrival of members of the staff is at once notified on a board and special notices are posted of emergent operations and *post-mortems*. On one occasion we pointed out in the complaint book that we had not been informed of some emergency operation that had been performed, and the matter was at once reported and orders issued to prevent a recurrence of the mistake.

Never elsewhere have I seen such facilities given to outsiders for looking on at operations practically over the Surgeon's shoulder and more than once have I seen post-graduates invited to assist. On several occasions we were asked to put questions and discuss matters, and the staff always seemed so happy to explain away difficulties and points one did not grasp straight off. In short you were made to feel you were welcome whatever part of the Hospital you went to. One word about quarters. I don't think suitable rooms are available, at any rate for a married man with a family, in the vicinity of the College.

But with tubes, buses, and trams starting, practically, from the door of the hospital one can live anywhere you like. For a penny or two you can get to Kew, Acton, Kensington, etc., and several men found it quite possible to stay right out in the country and yet, thanks to the tubes, to get up by 10 A.M. and remain till 6 P.M. The courses are recognised by the India Office. There is an important point in the leave rules which I ought to mention. Not long after returning from my first long leave, eight months' study combined with three months' privilege and a month of furlough, I was obliged much against my wishes to apply for a year's furlough as a member of the family was very seedy and a change had been ordered. I was informed that this could not be sanctioned as according to the rules on the civil side three years must elapse after you get back from Europe. Subsequently (when I had made other arrangements as it happened), I was informed from Simla that this restriction did not apply to furlough for less than three months' combined with study and privilege leave as in my case. Fortunately, a trip to Australia on short leave got me out of my difficulties, but I record the fact in case it may help anyone placed in a similar predicament. Six months' urgent on private affairs would, of course, be a last resource in emergency, but one is loath to part with this trump card before you are half through your service as I was at that time.

I append the menu for two days at the West London by kind permission of the Secretary

POST GRADUATE COLLEGE WEST LONDON HOSPITAL,
HAMMERSMITH W SYLLABUS OF ATTENDANCE OF
STAFF, LECTURES, DEMONSTRATIONS, &c

For the week ending May 20th, 1911 Monday, May 16th

- 10 A.M. Surgical, Registrars, Demonstration of Cases, (Surgical Wards)
 10 A.M. Visit of Postgraduates to Wards
 10 A.M. Dr Bernstein Special Class in Clinical Pathology, (Path Lab.)
 10 A.M. Dr Simson, Diseases of Women (Out Patients)
 11 A.M. Minor Operations in O.P. Department
 12 Noon Dr Bernstein, Pathological Demonstration (Path Lab.)
 2 P.M. Mr Pardoe, Special Class in Cystoscopy (Lecture Room)
 2 P.M. Dr Grainger Stewart, Medical Out Patients
 2 1/2 P.M. Mr Armou, Surgical Out Patients
 2 P.M. Dr Molton, X Ray Department
 2 P.M. Mr Baldwin, Visit to Surgical Wards
 2 30 P.M. Mr Dunn, Eye Department
 2 30 1/2 P.M. Mr Edwards, Operations
 2 30 P.M. Dr Saunders, Visit to Medical Wards
 3 P.M. Mr Bidwell, Demonstration in Surgical Wards
 4 P.M. Dr Low, Special Class in Tropical Diseases (Lecture Room)
 4 P.M. Mr Edwards Visit to Surgical Wards
 5 P.M. Dr Bernstein, Clinical Pathology (Lecture Room)

Wednesday, May 17th

- 10 A.M. Dr Simson, Gynaecological Demonstration (Lecture Room)
 10 A.M. Visit of Postgraduates to Wards
 10 A.M. Dr Bernstein, Special Class in Clinical Pathology (Path Lab.)
 10 A.M. Dr Saunders, Diseases of Children
 10 A.M. Dr Davis, Operations of the Throat, Nose and Ear
 11 A.M. Minor Operations in O.P. Department
 2 P.M. Mr Pardoe, Special Class in Cystoscopy (Lecture Room)
 2 P.M. Mr Bidwell, Special Class in Intestinal Surgery (Class Room)

2 P.M.	Dr Bernstein, Medical Out Patients
2 P.M.	Mr Etherington Smith, Surgical Out Patients
2 P.M.	Mr Bishop Harman, Eye Department
2 1/2 P.M.	Dr Molton, X Ray Department
2 P.M.	Mr Baldwin, Operations
2 30 1/2 P.M.	Dr Simson, Diseases of Women (Out Patients)
4 P.M.	Mr Bishop Harman, Special Class in Operative Ophth. Surgery (Class Room)
4 15 P.M.	Dr Beddoe, Demonstration in Medical Wards
5 P.M.	Mr Armou, Head Injuries (Lecture Room)

II

TETANUS AND QUININE

A CONSIDERATION OF THE VALUE TO CLINICAL MEDICINE OF THE RECENT MEMOIR BY SIR D. SEMPLI UPON THE RELATION OF TETANUS TO THE INJECTION OF QUININE

In all the notes of this memoir which I have seen, it seems to be accepted that the laboratory experiments proved in an unequivocal manner that quinine injections, though given with an aseptic technique adequate in all details, were yet capable and likely to provoke an attack of tetanus in the unfortunate recipient, that such an occurrence was not an abnormality so rare as to be classed as an accident due to an exceptional oversight, but an event so probable as to be foreseen and dreaded, and that, therefore, quinine injections should be administered only under such occasional circumstances as would allow this calamity to be particularly guarded against by means of a protective inoculation of tetanus antitoxine. Such a declaration was an evident contradiction to clinical experience based upon the results of thousands of quinine injections, to say nothing of the results of grave injuries resulting from accident or operation.

The statement (1) "it may now be regarded as proved that such cases (*i.e.*, cases of tetanus arising after quinine injections) are not always due to a contaminated needle or solution, but sometimes occur in circumstances in which the sterility of the apparatus used, of the fluid injected, and of the patient's skin at the site of injection, is assured," will naturally afford comfort to practitioners unfortunate enough to meet in their own practices with cases of tetanus occurring after injections of quinine, for it harmonises well with their own natural and sincere convictions. I have myself every reason to sympathise with their view of the accident, but I recognize that the assurances given by the operators of the perfection of their aseptic technique cannot be justly received as evidence worthy of unquestioned credit. A habit of ready credulity in the impossibility of avoiding such accidents would be a custom to be much deplored by the Medical Profession, for when excuse is easy, and blame unusual, a high sense of professional responsibility cannot be long maintained.

Before applying to practical medicine conclusions based upon the results of laboratory experiments, it is necessary to assure ourselves that such conclusions are adequately supported by the experiments upon which they rest, and

that these experiments can be reasonably compared with those experiments of clinical practice for whose guidance they were devised I think that a due appreciation of this principle would have prevented the hasty and admittedly premature summary of this memoir which appeared in the January number of 'PALUDISM', a journal with probably considerable influence among practitioners interested in the treatment and prevention of malaria. For, if we give to the memoir the careful attention which the apparent importance of its conclusions to clinical medicine deserves, there are many obvious criticisms which greatly lessen, if they do not altogether destroy, the application of these conclusions to the practice of medicine.

A very brief comparison of the experiments, upon which conclusion (2) is based, with the experiments usual in clinical medicine, suffices to show that in those the doses of quinine employed are enormously out of proportion to the doses used in these. In the experiments the smallest dose of quinine is grain 1 in $\frac{1}{2}$ cc given to a guinea-pig weighing 350 grammes (about two-thirds of a pound), the equivalent dose for a man of 10 stone would be approximately 210 grains dissolved in 4 ozs of water. It is not surprising that in the case of the guinea pig such a dose caused destruction of tissue at the site of injection so well marked and extensive as to form an obvious focus of dead tissue well suited to the growth and development of any tetanus spore which chanced to pass that way, and I do not suppose that any one would seriously oppose the conclusion that, in the case of man, an equivalent dose would produce a similarly extensive tissue necrosis, but I do not admit that the effects of these enormous doses upon guinea-pigs justify the conclusion that the therapeutic doses usually given to man will produce results at all similar. Upon the other hand the experience of the results of numberless injections of quinine—particularly if given intramuscularly—justifies the assertion that if such injections are given with aseptic precautions well marked destruction of tissue at the sites of injection does not occur. It has long been accepted that some destruction occurs, but these guinea-pig experiments do not help us to a fuller knowledge of its extent.

Conclusion (3) cannot be checked by the results of clinical medicine, but it is probable that its truth depends upon the extent of destruction caused. It is conceivable that with a moderate dosage of quinine, probably causing very trivial tissue destruction, the conclusion would be found unwarranted. Certainly there is no experiment which justifies the use of the expression "where quinine has been injected" unqualified by any reference to the dosage employed. In the recorded experiments at least $\frac{1}{2}$ gr doses of quinine were given in all injections, and, though the weights of the

guinea-pigs are not given, an equivalent dose for a man would be about 70 to 80 grains.

In conclusion (4) it is stated that "pure" washed tetanus spores "given hypodermically to monkeys and guinea-pigs do not produce tetanus but when quinine is injected hypodermically at a different part of the body either the day before, the same day, or the day after spores are given, a large percentage of these animals contract 'tetanus'."

Again, a study of the experiments, upon which this conclusion is based, shows that without some qualification such a conclusion is unjustified and misleading. "Washed tetanus spores" given hypodermically to guinea-pigs, whose general health is lowered by means such as exposure to cold, will produce tetanus. In all the experiments recorded the dose of quinine is at least $\frac{1}{2}$ grain daily in one injection, in previous experiments it has been shown that 1 grain for every 150 grammes of weight was a certain lethal dose of quinine for a guinea pig, and that in some cases 1 grain per 233 grammes of weight proved fatal. Therefore to these guinea-pigs harbouring recently inoculated tetanus spores at least one-sixth of a lethal dose of quinine was given in one dose and repeated upon subsequent days. Is it not probable that such dosage was quite sufficient to lower the general health of the guinea-pigs in a way similar to the effect of cold, and that under such conditions the spores were enabled to develop and cause tetanus, not because they were conveyed, still harmless, from the unsuitable sites of spore injections to the sites fitted for their development by quinine injections, but because the lowered general health of the animals allowed them to first develop and become harmful at the original sites of injection? The experiments seem to leave no doubt upon this point. In all the guinea-pigs which developed tetanus the first symptoms appeared in parts corresponding to the injections of tetanus spores, not in the parts corresponding to the injections of quinine apparently the spores had ceased to be harmless before their conveyance to the sites of quinine injection. So far as its clinical importance is concerned conclusion (4) is but a repetition of the previous conclusion.

Moreover, in the experiments in which washed tetanus spores are used the dosage of spores does not appear to have been considered a factor of any importance either by the experimenter himself or by those who have applied his conclusions to clinical practice. The fact that out of the thousands of spores presumably existing in an injection of a $\frac{1}{2}$ cc of the dregs of a month old tetanus culture some spores, few or many, should remain latent for months at the site of injection is possibly of importance to clinical medicine, but I should not venture to describe its importance as 'evident'.

It is surely preposterous to suppose that a number of spores in the remotest degree equivalent to the number injected into the guinea-pigs would ever gain access to the body of man under the conditions of an accidental hurt. The conclusion that because out of the thousands of spores given in bulky injections to these guinea-pigs a few escape destruction and lie latent, possibly securely encysted, in the tissues, therefore it is probable that out of the few spores sometimes accidentally introduced into man some escape being rapidly and effectively dealt with, is not a conclusion very convincingly established. Such an escape may happen but these experiments do not prove it, and to my mind they do not advance the hypothesis to the stage of probability.

By what seems to be a strange oversight there is not a single experiment to show that the spores of tetanus remaining latent in the guinea-pigs after the injections of extravagant doses can be stirred into activity within the animal's bodies, either by the injection of quinine or in any other way. The assumption is made that, because certain effects result from the injection of thousands of spores into animals whose general health is, at the time or very shortly afterwards, seriously depressed by such means as large quinine injections, therefore similar effects must follow the injection of quinine into animals in whom some spores from thousands injected months before remain latent, such spores being very possibly few in number and securely encysted. Such an assumption may be true but upon the evidence given its probability does not impress me as necessarily great.

In conclusion (8) it is stated "Tetanus infection was present in the intestinal tract of healthy human subjects in four cases out of ten examined. In three of these cases the tetanus bacilli isolated were virulent for guinea-pigs."

The experiments in table 15 of chapter 5 of the memoir show that tetanus germs are common in human faeces. To any one conversant with the condition of the large bowel in patients suffering from dysentery it must seem that if such germs cannot make their presence obvious under these conditions without laboratory aid then that presence even to the extent of 40 per cent is a matter of very little importance. To describe the frequent existence of tetanus germs within the intestinal tract as "tetanus infection" implies a threat which the germs seem powerless to fulfill.

The essential fact of conclusion (12), viz., the efficiency of tetanus antitoxin is of course not intended as news to the medical profession. For many years past tetanus antitoxin has been in general use as a prophylactic against tetanus and the agreement as to its efficiency is practically unanimous. But if the safe use of quinine by injection is shewn to depend upon the co-operation of tetanus antitoxin, it can

hardly be believed by practical men that such use will long continue. Moreover the widespread and frequent use of injections of the antitoxin would introduce additional dangers quite as great as the particular danger which its use is intended to avert.

The above criticisms are obviously not concerned with the accuracy and thoroughness with which Sir D. Semple's experiments have been carried out. The reputations of the experimenter is a sufficient guarantee that his experiments may be accepted as accurate, but accepting their results to the full I have endeavoured to make plain that the doses of both quinine and spores are so extraordinarily large when compared with the therapeutic doses of quinine given to man or those of spores possibly introduced by accident, that any application to clinical medicine of the final conclusions of this memoir is unjustified, and that the expression of the final conclusions without any reference being made to the dosage of quinine or tetanus spores is unfortunate, as tending to mislead the majority of medical practitioners.

Finally, I would state that I have chosen to base my criticisms upon the guinea-pig experiments because these form the backbone of the memoir, and also because I was in a position to satisfy myself that, so far as the experiments supposed to demonstrate the local effects of quinine injections were concerned, the grounds of my criticism were reasonable.

ANNUAL REPORTS

HOSPITALS REPORT

EASTERN BENGAL AND ASSAM

This is a very valuable report of progress in the new province of Eastern Bengal and Assam and is submitted (September 1911) by Colonel R. Neil Campbell, C.I.E., M.R.C.S. There is so much of interest in this report that we can only select a few extracts on the subjects of greatest general interest. The report, it must be agreed, is one of steady and hopeful progress. Colonel Campbell writes —

"During the year 50 new dispensaries were opened and 26 were closed, of which latter 11 were District Board dispensaries in the Bakarganj district. These 11 dispensaries closed in Bakarganj were in a miserable condition located in huts generally too small and frequently out of repair, inadequately manned and insufficiently equipped. The money spent on these institutions is now, however, being utilized towards improvements in the equipment, buildings, establishment etc. of the more useful dispensaries in that district. This was a step in the right direction for it is far better to have a few well equipped dispensaries than a number some of which are not worthy of the title. Want of funds is the common excuse pleaded by Local Fund to whom the necessity of improvements in the way of equipment or buildings has been suggested by inspecting officers, but while I believe that this difficulty actually exists in some cases, I am not prepared to admit that in the particular cases to which my remarks refer the Boards concerned are altogether free from blame. The tendency on the part of local bodies and even the leading men living in the vicinity to pay but little attention to dispensaries that are small and outlying is in my opinion a mistaken policy for it is at these very dispensaries that unfavourable opinions are formed by the uneducated classes in particular, and these impressions are apt to spread and take root in the minds of the people."

We are glad to see a steady advance in the number of Surgical Operations performed —

The number of selected operations performed in the year 1910 was 4,602 against 5,001 and 4,401 in 1909 and 1908, respec-

tively. Of the selected operations performed in 1910 917 were excision of tumours and cysts of all kinds bigger than walnut, 39 excision of joints, 240 operations on bones 212 amputation (through and above the metacarpal and metatarsal bones), 546 caesarean 9 abdominal section 92 abscess of liver 47 lithotomy 31 lith lap 11, 182 obstetrical, 20 excision of eyeball, 9 hidrotomy 3 trephining the skull 3 castration 3 perineal section for stricture of urethra, 3 tracheotomy, 2 excision of breast, 3 haematocele 49 radical cure of hydrocele, 1 excision of larynx 2 hysterotomy, 1 excision of vermiform appendix 1 hydatid cyst of liver, 7 amputation of penis."

The largest numbers of selected operations were performed by the following officers in 1910 we are obliged to omit the similar figures for 1908 and 1909 —

Lieutenant Colonel A. R. S. Anderson, I.M.S., Chittagong, 151 (including 86 extraction of lens), Captain D. P. Goh, I.M.S., Dinapuri and Rajshahi 119 (including 101 cataracts) Lieutenant Colonel E. A. W. Hall, I.M.S., Dacca, 107 (56 extraction of lens), Captain U. A. Goultby, I.M.S., Kamrup 55 (76 cataracts), Major H. Innes, I.M.S., Silchar, Dacca and Mymensingh 45 (10 cataracts), Captain C. R. O'Brien, I.M.S., Jalpaiguri and Birisir, 40 (21 cataracts), Captain J. F. James, I.M.S., Jalpaiguri and Mymensingh, 42 (14 cataracts)

Among the Assistant Surgeons may be mentioned Maulvi Shah Jahan Ali, Mymensingh 126, Jogendranath Mitra, Dacca and Narayanganj 110, Upendra Nath Roy Chaudhuri, Rajshahi 73, Rajani Kanta Das Gupta, Chittagong 62, Sheikh Elahi Buksh, Sirajganj, Bogra, Pabna and Rangpur, 48 Ashutosh Datta, Nator, 41, Nalin Prasad Neogi, Pirojpur and Madaripur, 39, Bidhu Bhushan Pal, Dinajpur 35, Aswini Kumar Das, Krishnanagar, 33, Suresh Chandra Roy, Jamalganj, 30.

The following extracts are of interest —

"I would repeat the suggestion made by my predecessor, Colonel D. Wilkie, I.M.S. in the last triennial dispensary report that all mofussil dispensary buildings should, if funds permit have paved plinths and corrugated iron roofs because such buildings require less money spent in repairs and thatched buildings are apt to be burnt down specially in the season of jungle fires. We have recently had two cases of this kind in Nowrang and in Kamrup."

"The State dispensaries obtain their supply of medical stores from the Government Medical Store Depot Calcutta, and the Local Fund dispensaries in Eastern Bengal from Messrs Burgoine, Burdages and Company, London, and in Assam from Messrs Berens and Co., Bristol Tinctures are obtained from Messrs Smith, Stamford and Co, Calcutta and from Messrs D. Walde and Co. of Konnagar, quinine from the Royal Botanic Garden, Shibpur and castor oil from the Raipuri Boalia Central Jail Dispensaries of classes IV and V make their own arrangements for the supply of medicines. I may mention that in September 1910, I suggested, and the Local Government approved the introduction of tablets of quinine hydrochloride in place of the Government sulphate as it present given in solution for the treatment of malarial fevers and also for use as a prophylactic for the Police Jail establishment, Jail hospitals and Lunatic Asylums of this Province. These tablets are obtained locally in India."

The following note on Leprosy and Nastin is of value —

"There were no deaths among the lepers treated in 1910. Decidedly satisfactory results have been obtained from the treatment of leprosy by hypodermic injections of Nastin. In 1909, 2 patients were treated with satisfactory results. In 1910, 11 patients were so treated. They received injections every 5th or 7th day and sometimes at longer intervals owing to local or general reaction. The total number of injections given to the 11 patients under treatment during the year was 212, the number in each patient varying from 7 to 31."

All angesthetic and tubercular cases were selected for treatment, with the exception of those showing symptoms of acute or chronic Bright's disease, profound anaemia, ophthalmia or affections of the internal organs.

From the history of the 11 patients treated during 1910, it appears that the acute growing pains all over the body, and the numbness and tingling sensations from which lepers generally suffer disappeared very rapidly. The skin peripherally the thickening subsided gradually the leoncereous patches resumed their normal tint and sensation returned to the angesthetic parts. No local effects except temporary burning sensations were noticed after injections. In no case was there any increase of lesions nor did any fresh lesion break out except in one case which resulted in dimness of vision. In most cases the improvement was well marked. Of the 11 patients treated during 1910, 1 was discharged cured, 2, though practically cured have been advised to stay on in the Asylum for a few months more and 3 are very much improved. The ages of these six patients varied from 14 to 40 years and the periods of duration of the disease from 4 to 20 years. The remaining 5 who were admitted late in the year, are doing well, and there is a marked improvement in their general health.

As the results of the Nastin treatment in the Sylhet Leprosy Asylum are very encouraging it is desirable that it should be continued even though it is expensive."

Redistribution of duties

With a view to the improvement of existing medical arrangements at district headquarters and subdivisions, the duties of Civil Assistant Surgeons and Sub Assistant Surgeons have been redistributed. At subdivisions, where there is a Sub Assistant Surgeon in charge of the dispensary, the Civil Assistant Surgeon has been relieved almost entirely of the routine duties of the dispensary so as to give him time for the important duties of Police Surgeon and medical and sanitary officer of the subdivision, including the inspection of dispensaries, sanitation, epidemics vaccination and vital statistics within the limits of his subdivision under the directions of the District Civil Surgeon. The Assistant Surgeon will also hold charge of the lock up or sub jail at the subdivisional headquarters. Similarly, at district headquarters, where the resident medical officer is a Sub Assistant Surgeon, the Assistant Surgeon has been relieved of the routine work of the dispensary so as to enable him to assist the Civil Surgeon in medico legal duties and the inspection of dispensaries, vaccination, sanitation, epidemics and vital statistics within the said subdivision if required to do so by the Civil Surgeon. The duties of the Sub Assistant Surgeon will be the regular duties of the dispensary with the exception of the indoor patients and their diet and the accounts which will be retained by the Assistant Surgeon both at district and subdivisional headquarters.

Post mortem Examinations

Theoretically it is desirable that the Civil Surgeon should make post mortem examinations in all cases but in practice this is impossible, and experience has shown that in a large number of autopsies the examinations were rendered practically valueless owing to the fact that the bodies reached headquarters in an advanced state of decomposition. To prevent this a redistribution of the centres at which autopsies are held has been made and a few more centres have been added where autopsies may be held in future. The general rule observed, however, is that all thanas from which the bodies can reach the Civil Surgeon in time should send in corpses to headquarters, but in the great majority of cases, post mortems will be carried out at the nearest post mortem centre. And, as it is desirable that all autopsies should be performed by medical men of approved professional capacity and unimpeachable integrity, it has been arranged that only reliable and well qualified Assistant Surgeons and Sub Assistant Surgeons should be posted to centres at which post mortems are performed, the latter class of medical subordinates being rarely posted to such charges, and, where possible, advantage has been taken of the services of non official medical men, 8 of whom have been empowered to hold post mortem examinations on payment of fees. I may mention that 15 Sub Assistant Surgeons whose medico legal knowledge was deficient were required to appear for examination in this subject and duly passed, 10 of these being specially deputed to the Dacca Medical School for a course of training.

We are glad to see such a decided recognition of this important part of a medical man's duties.

The following note on the Leave question is of special interest —

"No officers of the Indian Medical Service have up to date applied for deputation to the Kasauli Research Institute for a training in clinical bacteriology and technique. Whether this may be due to the fact that the subject is a difficult one to become proficient in with our limited appliances or whether our officers already possess the knowledge, I cannot say, but it would certainly have been difficult to spare an Indian Medical Service officer for deputation owing to there being so many on leave. While on this subject I may I think, suitably refer to the necessity of saving the present leave reserve from 20 to 25 per cent — the former limit is distinctly inadequate, the main reason being that when medical officers go on leave they do so for longer periods than formerly as a result of the study leave concession. Moreover, officers of the Indian Medical Services are primarily recruited for the Army, and before they come to Civil, have put in some years service and are entitled to fulfil such within 8 years after joining the Civil Department."

Treatment of Emergent Cases

Colonel Campbell writes —

"I have observed that at many outlying dispensaries in which there is no in door accommodation, no proper arrangements exist for the care and treatment of emergent cases and a case actually occurred in 1910 in which a poor woman was allowed to die on the cold side close to an outlying dispensary. When any person, seriously ill, presents himself at an out-door dispensary, special arrangements should be made for his accommodation and treatment till he is able to take care of himself, or until he is sent to the nearest in door dispensary.

I have asked all district medical officers to see that this is done in future, and that an emergency cot and bedding which would only be used in cases of serious illness or accident, should be provided at each out door dispensary. This is a matter which should engage the attention of all Local Boards."

Colonel Campbell as an experienced Physician himself is well alive to new developments in methods of treatment and we quote as follows—

"A very interesting report is given by Captain Godson, I M S, Civil Surgeon Bakalganj of his treatment of cases of dysentery in the Basual Jail by Hypodermic injection of Forster's Vaccine.

From the 15th December 1909 to 14th April 1910 177 cases were treated. Four doses of vaccine were injected at intervals of 14 days, the quantity of the first dose was 2 minims to which 2 minims more were added in each subsequent dose.

No treatment other than the vaccine was given to the patients, except an initial dose of castor oil.

The number of cases admitted to hospital during the 4 months preceding vaccine treatment was 161 during the 4 months of this treatment 116 and during the 2 months after the cessation of vaccine treatment 4.

Of the 177 cases treated, 99 were cured, 47 had relapses and were re-admitted, one was re-admitted for some other disease, 5 died and one turned chronic showing no improvement in the remaining 34 cases which were released, the results were not known.

As regards after effects of this treatment there was some slight tenderness at the seat of injection and in most cases a slight rise of temperature from 99° to 100° F. The number of admissions was greatly reduced after the commencement of the vaccine treatment but began to rise again after its cessation. I agree with Captain Godson in thinking that no positive statement can be made as to the effects of vaccine treatment as in several cases the results were not complete, as they were released soon after receiving their last dose and that the treatment has not had sufficient trial. But the number of relapses (32.86 per cent of total treated less those released results unknown) is very disappointing. In the Comilla Jail, Forster's Vaccine was tried in 21 cases of dysentery with 3 injections. There was slight local reaction and slight fever for a day and mucous disappeared after 6 days or so. Eighteen recovered and 3 died each after a relapse.

Forster's Vaccine was also tried in 60 cases of dysentery in the Gaibati Jail and all recovered, while there were two deaths among those who were not treated with Forster's serum.

Apparently, so far the results of this method of treatment are indefinite, but I think that more systematic and regular trials may give better results.

Saline injection in cholera—In 1910, 29 cases of cholera all admitted in a state of collapse, were treated with intraperitoneal saline injections by 2nd grade Assistant Surgeon Harendra Kumar Das at the Basual dispensary. The effect of the injection is said to have been marvellous. Within an hour or two the body became warm and the pulse was felt at the wrist. No other medicines were needed. Out of 29 cases, only 3 died and these developed typhoid before treatment. This Assistant Surgeon also treated two cases in his private practice by this method with success. This year up to April 10 cases have been treated in the Basual hospital of whom 9 recovered and one died. It has been the experience at Basul that cholera patients who have developed typhoid do not yield to intraperitoneal injection and such cases were therefore treated with a mixture of oil luciferous which was given every 15 minutes during first hour and then at intervals of one hour and normal saline injections (one pint) per rectum every four hours. This treatment also proved effective. Out of 17 cases treated by this method in 1910 11 recovered.

We have no more space to quote from this professionally interesting and valuable report but may congratulate Colonel Neil Campbell and his officers in a fine record of advance and progress.

VACCINATION REPORT

I B AND ASSAM

The Triennial Report on Vaccination in Eastern Bengal, 1908-1911, is submitted by Lt Colonel F C Hale, I M S, the Sanitary Commissioner.

The average number of Vaccinators employed was 1146 of which 851 were licensed and the rest paid. The paid vaccinators are employed in the hill tracts and in the Assam and Siang Valleys where the people are less accustomed to vaccination. Some Civil Surgeons have asked for paid vaccinators and the Sanitary Commissioner is considering the matter of appointing female vaccinators for work among certain classes of Mahomedans.

Over 4½ million vaccinations were performed in the three years and there has been a substantial increase in vaccination during the past decade. The percentage of successful vac-

cination is given as 97.2 per cent for primary and 73 for re-vaccinations. We quote a few extract from Lt Colonel Hale's report—

"It is interesting to note how the mortality from small pox tends to run in wave lengths of 5 to 6 years, the crest of each wave being reached as soon as a new generation of unprotected individuals has sprung up. Such waves are distinctly traceable in the statistics of Dacca, Mymensingh, Faidpur, Dinajpur, Jalpaiguri, Bogra and Nowrang. Other similar but more irregular curves are seen in the statistics of other districts."

Verification of operations by inspecting officers

In the last report, attention was drawn to the impossibility of the Deputy Sanitary Commissioner carrying out the nominal programme of his work which is to visit every district and to inspect a sample of each officer's work. The condition has become even more pronounced now than it was then. His time has been very largely taken up with special public health enquiries and with the Provincial Laboratory and thus portion of his work has consequently fallen seriously into arrears. He only succeeded in inspecting 592 operations in the course of the year, of which 405 were in the sub divisions of Mymensingh. The Civil Surgeons' inspections in many of the Eastern Bengal districts are also becoming more difficult to make each year and are practically confined to the vicinity of their head quarters and to the larger centres of their districts.

In Bakalganj for example, the inspections of primary operations were particularly bad (3 in 1908 1909, 09 in 1909 1910 and 02 in 1910 1911). In Mymensingh Chittagong, Tipperah and Rangpur they were under 1 per cent and in only 7 districts, Noakhali, Bogra, Malda, Nowrang, Nagi Hills, Gaik Hills and Manipur were they over 10 per cent. The percentage of inspections by the Deputy Sanitary Commissioner and Civil Surgeons is only 3.96 of the operations of the last three years (167,000) which is quite insufficient for the purpose. A proposal to appoint special inspecting officers for vaccination and vital statistics will be submitted shortly.

The subordinate staff inspected 89.93 per cent of primary operations and 65.26 per cent of re-vaccinations, during the last three years. In the Assam districts the ratio is lower than in the Eastern Bengal districts probably owing to the comparatively scattered condition of the villages, and the sparseness of the population.

On this point the Government Resolution is as follows—

"The report discloses an unsatisfactory shortness in the amount of inspection done by Civil Surgeons. This question has already engaged the attention of the Lieutenant Governor, and the Inspector General of Civil Hospitals recently addressed Civil Surgeons on the importance of this branch of their duties. His Honour considers it not improbable that special inspecting officers for vaccination and vital statistics may ultimately have to be appointed but has decided to refrain from passing final orders until it is seen how matters progress when Civil Surgeons do their duty more fully. The Local Government has on more than one occasion had to remark that the primary duty of the Deputy Sanitary Commissioner is the inspection of Municipalities, and the time which he can devote to inspecting vaccination work must necessarily be limited."

The Shillong Depot has always been well known for producing good lymph. Lt Col Hale writes as follows—

Vaccine Depot In the report for 1907 1908 it was pointed out that the Shillong Vaccine Depot, which was originally constructed to supply the needs of the old Assam province, had been enlarged to provide for the Eastern Bengal districts as well. This depot has served its purpose for many years past and it has prepared excellent vaccine but it is no longer in accordance with modern requirements. The stalls and arrangements for housing the calves while under operation are not satisfactory. There is no apparatus for cold storage which, according to modern ideas, is essential to obtaining a reliable vaccine and although a small extra supply is kept in stock for emergencies, it is not as large as it ought to be, to provide for use in the event of an epidemic breaking out among the calves or of a failure in their supply. The Deputy Sanitary Commissioner has recently visited the Vaccine Depot at Belgaum which is one of the most modern and recently constructed in India to study the lines on which a similar depot may be built for this province.

The annual report on the Depot has been written by Major Innes, I M S, the present Civil Surgeon of Shillong, but the work of the two past seasons has been supervised by Major MacLeod to whom thanks are due for the great care and trouble which he has taken in its management, and to whom its success has been in great part due.

Vaccine 1,781,075 capillary tubes were loaded during the past year 2,145,024 in 1909 1910 and 1,866,457 in 1908 1909. Control is exercised by the Superintendent to ensure as little waste as possible. An unusual number of complaints were received from the districts in the early part of the seasons about the quality of the vaccine. They were by no means

universal, and the cause of the trouble was not obvious, is the origin and history of every specimen of vaccine are carefully recorded and samples of it are tested on children before despatch to the plains. Every precaution which can be, is taken to maintain the quality of the vaccine but the only effective way of ensuring that the vaccine is always of uniform character is to store it for a considerable time in ice, to destroy the extraneous organisms.

Correspondence

"COVERING UNQUALIFIED WORK"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

DEAR SIR—I write for information on a point which, though it perhaps concerns Mission Doctors most, may easily affect any Muslim Civil Surgeon who is fortunate enough to have a qualified midwife resident in his station. Does the phrase "covering unqualified work" include giving directions to such a midwife to use forceps if she is called to a case which will die unless delivery is effected by the forceps either (1) during the doctor's absence at a distance or (2) where the patient is strictly "padamashin" and cannot be induced to admit a man doctor? I can point to a good many lives saved during my 20 years' practice in India by the skill of nurses whom I have encouraged to act in this way and I have no intention whatever of changing my procedure. But I find a somewhat highly placed critic at Home with no knowledge of India, threatening anyone who thus "covers unqualified work" with the removal of his name from the Medical Register, and I wish to know how the law stands in India.

Yours etc
RANCHI

K W S KENNEDY

[We invite correspondence and will be glad of the opinions of medical men in India—Ed., I.M.G.]

A PARTICULAR FORM OF FRACTURE OF SKULL

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—If a rigid bar be fixed upon a wall by one of its end and if more and more heavy weights are gradually placed on its free end the bar will ultimately break at the fixed point in the wall. The same thing will happen if a sharp and heavy blow is struck on the bar. By the principle of lever the effect of the blow or of the weight will be greater, more this is nearer to the free end of the bar, than the fixed end. This well known mechanical principle will explain a particular form of fracture in a definite region of the skull.

The anterior superior end of a parietal bone which rests below the frontal bone is somewhat in the position of a bar fixed at one end and free at the other end. More correctly speaking as the two such ends of the separate parietal bones are interlocked by firm indentations at the sagittal suture and they should be considered together as resembling the free portion of a rod fixed at the base. This comparatively free portion of the parietal bone becomes fixed at the point when the parietal bone begins to rest upon the frontal bone instead of supporting the same. If a blow of sufficient force is struck on this comparatively free and movable portion of the parietal bones the line of fracture tends to pass through the two fixed points of the parietal bones noted above so that two triangular pieces are broken off from the anterior and inner margins of the parietal bones. According to the principle of the lever the effect of a blow in breaking off the pieces of bones will be greater, more it is situated near the anterior end of the sagittal suture. I have seen this to happen actually in some cases and the notes of a P.M. examination describing above kind of fracture has been published in the August number of the Indian Medical Gazette. Giving the summary of the paper read before the medical section of the Asiatic Society, Bengal. In this case the two anterior and inner ends of each of the parietal bones were broken off in the form of two isosceles triangles having the sides about $1\frac{1}{2}$ inch long, and there were a few fissures in the unbroken portion of the parietal bones starting at somewhat right angles to the line of fracture. In this case the blow struck was almost at the very end of the sagittal suture. The occurrence of the fissures resembled what happens when a marble is struck on a pane of glass. In this last case the lines of fissure begin at the point struck and extends towards the portions of the glass which are comparatively fixed. Something like the above happened in this case also.

ARUMBIGH

Yours, etc
SARAS LAL SARKAR
Assistant Surgeon

[This is an amplification of the brief note on this fracture given in a recent report of the Asiatic Society, Medical Section—Ed., I.M.G.]

THE SERPENT AND VITALITY

To the Editor of "THE INDIAN MEDICAL GAZETTE,"

SIR.—Of all the creation of God the least use to which any live object has been put to by mankind is the serpent. And yet it would be hard to assert that the serpent is wholly a useless being and can be of no advantage to humanity. There is scarcely another live object so agile so keen, so sagacious and so full of vitality as the serpent. It needs no argument to prove that on account of its bite it is dreaded by man and nobody has thought of bringing it to any use. Nevertheless the serpent is known to be inoffensive until it is molested, and is a favourite companion of the Hindu God Sita.

Is it too much to suggest that modern science ought to be requisitioned to find some use for this reptile? I am inclined to think that if a snake is caught alive and a serum is obtained from its body by means of blisters and the same after making septic and sterile is inoculated it will be specially good for men afflicted with melancholia and worn out by disease of functional derangement and for idle and sensual persons. I know of a case in which an elderly Muslim gentleman unconsciously at night swallowed a young snake which had hid itself in his water bowl. The man was very restless for two days till the snake was alive in his belly, but thereafter he suddenly developed an abnormal vivacity of the generative organ remained afish and is still hale and hearty. The vitality and the courage of the serpent is proverbial, and any body inheriting a spark of the vitality will undoubtedly be much better off than without it. I give out the idea in order that scientists and other competent men may experiment with it in the laboratories.

SIBRAUL DISPENSARY,
BEWAHS CANTONMENT, } Yours faithfully,
The 7th September 1911 } RAM CHAND,
SENIOR SUB ASST SURGEON

[The above quaint letter is printed as received—Ed., I.M.G.]

AN INTERESTING CASE OF ASCARIASIS SIMULATING APPENDICITIS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR.—Shauif Husun, a Mohammadan male, age 23 years, was admitted into the hospital on the 18th August, 1911, complaining of pain and swelling in the right iliac region and upper part of right thigh of 8 days' duration. On examination it was found that he kept the right thigh flexed and stiff. The swelling extended from Poupart's ligament up to the region of the liver and also backwards to the outer border of the spinal muscles. On palpation the swelling felt hard but on the back side it gave distinct sense of fluctuation as if there was pus inside. The temperature at the time of admission was 101.8°F. Patient complained of pain on pressing the iliac fossa. All the signs and symptoms pointed to the diagnosis of suppurative appendicitis. An operation was decided upon. Captain Hogan, my Civil Surgeon, however, was of opinion that it might be due to roundworms. The same evening an ounce of castor oil was administered. On going round the next morning to my surprise I discovered a number of roundworms in his stools. He felt much relieved. He was put on Sennitom and continued passing worms for the whole week. His condition was one of steady progress towards recovery and the swelling and pain also gradually disappeared altogether. Such cases are not very common, so I thought this one was of sufficient interest to be put on record.

MUZAFFARNAGAR, } SHANKER DASS,
The 28th August, 1911 } Assistant Surgeon

THERAPEUTIC NOTICES

THE BRITISH MEDICAL ASSOCIATION MEETING AT BIRMINGHAM

An attractive feature of the exhibit of Burroughs, Wellcome & Co was the fine collection of medicinal plants grown at the "Wellcome" Materia Medica Farm. These plants are raised under ideal conditions and their cultivation near the "Wellcome" Chemical Works and under the superintendence of experts has resulted in the selection and maintenance of the strains of each plant best for medicinal purposes.

Among products which are the result of chemical and pharmacological research, one of the most noteworthy is "Epinine." This substance is presented as a colourless one

per cent solution enclosed in 10 c.c. and 25 c.c. bottles and also in hermetically sealed 'Vaprole' containers. Its action resembles that of the supra renal gland active principle, but the rise of blood pressure produced is more prolonged.

'Lodil' is a salt of an alkaloid prepared by the oxidation of iudanoine and is closely related chemically to hydrazine and cotanine. It has been used with advantage in cases of uterine haemorrhage.

These products "Elatutin", "Ergotoxin" and "Tyramine" which are the result of special research in regard to ergot, illustrate the modern preference for standardised preparations of active principles in place of variable extracts.

Substances of animal origin are obtaining an increasing place in medicine were well represented at this exhibit. "Tubloid" and 'Vaprole,' thyroid gland and pituitary gland being prominent examples.

The series of "Wellcome sera, vaccines and tuberculin," which also come under this brand are prepared with the utmost care, and under the direct supervision of skilled bacteriologists at the Wellcome Physiological Research Laboratories.

A concentrated diphtheria antitoxin has recently been introduced under the "Wellcome" brand containing 1,000 antitoxic units in 1 c.c. or less of fluid. This concentration, which presents a decided improvement over the more bulky injections, has been effected by the introduction of a new technique utilising salt precipitation and eliminating inert proteins.

We understand that Professor Albert Carless has just passed for the press the eighth edition of the well known "Manual of Surgery," which Messrs Baillière, Tindall and Cox announce for publication next month. Rose and Carless's Manual has been a phenomenal success and would appear to be as popular with the profession and students in America, Canada, Australia and India as in this country, and the new edition will be made additionally attractive by the inclusion of numerous coloured plates in the preparation of which the author has been assisted by Dr D'Este Emery. Many of the older illustrations have been re-drawn and the entire work revised.

DIEULAFOY'S MEDICINE

So favourable has been the reception, and so satisfactory has been the demand for the English translation of Professor Dieulafoy's "Manuel de Pathologie Interne" that a first impression together with a reprint of two thousand copies is already nearly exhausted and, to meet the demand of further orders another reprint is being rapidly passed through the press.

The translation has been ably accomplished by Doctors Collins and Liebmann and it enables those who cannot read French, an opportunity of studying the subject from the most representative standpoint of the Gallic school.

Dieulafoy's "Text book of Medicine" is beautifully printed, is complete in two handsome volumes containing over 2,000 pages, and published by Messrs Baillière, Tindall and Cox at a price which compares very favourably with that of any other text book on the subject.

'WELLCOME' BRAND HÆMOLYTIC SERUM FOR SHEEP'S CORPUSCLES

The growing recognition of the importance of the Wassermann reaction in the diagnosis of syphilis, and its consequent increased use, have led Messrs Burroughs, Wellcome & Co. to issue, in convenient form and quantity, two of the reagents necessary for carrying out the test. These are "Wellcome" Brand Alcoholic Extract of Guinea pig's Heart (for use as antigen in the Wassermann reaction), and "Wellcome" Brand Hemolytic Serum for Sheep's Corpuscles (for use in the Wassermann and other complement deviation tests).

The Pasteur Vaccine Co., Ltd., 35, Walbrook, London send us specimens of their FFRUENLACTYL, elegantly got up in tablet form.

Service Notes.

LIEUTENANT COLONEL JOHN WILLIAM RODGERS of the Bengal Medical Service retired on 5th July 1911, receiving one of the extra pensions for the year 1911-12. He was born on 3rd September 1856, educated at Edinburgh University, took the diplomas of M.R.C.S. (Edin.), and L.R.C.P. (Edin.) in 1880, and entered the I.M.S. on 2nd April 1881, becoming Surgeon Major on 2nd April 1893, Lieutenant Colonel on 2nd April 1901 and being placed on the selected list on 10th April 1908. All his service had been passed in military employment he had officiated for some time as an Administrative Officer but had to retire, foregoing promotion, on account of ill health, and for the

last six months had been on sick leave. He had seen a good deal of active service, the Hazara Expedition of 1888 on the North West Frontier, the Chitral Campaign, including the relief of Chitral, in 1895, and the operations in Somaliland East Africa, in 1903-04, on each occasion receiving the medal and clasp.

DEPUTY SURGEON GENERAL JOHN JONES, Bengal Medical Service, retired died in London on 8th August 1911. He was born on 17th January 1830, took the diploma of M.R.C.S. and the degrees of M.D., St Andrews, in 1856, and entered the I.M.S. on 20th February 1856, as Assistant Surgeon becoming Surgeon on 20th February 1868, Surgeon Major on 1st July 1873, and Brigade Surgeon on 1st April 1882, and retired, with a step of honorary rank, on 17th January 1885. In 1880 he became M.R.C.P., London. He served in the Mutiny in 1857-58, but much of his service was passed in civil employment, and at the time of his retirement he was Surgeon Superintendent of the Presidency Europe in General Hospital, a post in which he was succeeded by Surgeon Major E.A. Birch.

LIEUTENANT COLONEL ALEXANDER MILNE, of the Bombay Medical Service, retired on 25th July 1911, on completion of thirty years' pension service. He was born on 4th January 1846, educated at Aberdeen University, where he took the degrees of M.A. in 1877, and of M.B.C.M. with honours, in 1880 and entered the I.M.S. as Surgeon on 2nd April 1881, becoming Surgeon Major on 2nd April 1893, Lieutenant Colonel on 2nd April 1901, and being placed on the selected list on 11th November 1905. The Army List assigns him no war service. Most of his service had been spent in the Mint, and for several years previous to his retirement he had held the appointment of Assay Master of the Bombay Mint.

SURGEON MAJOR JOHN INCE, Bengal Medical Service, retired, died at Swanley Kent, on 23rd August 1911. He was born on 10th March 1830, educated at Guy's, and took the diplomas of M.R.C.S. and L.S.A. in 1854 and the degree of M.D., St Andrews, in 1851. He entered the I.M.S. as Assistant Surgeon on 20th February 1868, Surgeon Major on 1st July 1873, and retired on 31st March 1878. He served in the mutiny in the Sargi Field Force, and was present at the capture of Fort Belabat on 13th June 1857, the assault and capture of Neuvali 18th September 1857, and the pursuit of Tantia Topi, receiving the medal also in two Yusufzai expeditions on the North West Frontier in 1863-64 and in 1866. He was the author of the "Kashmir Handbook" once the standard work on Kashmir, published in Calcutta in 1867, a work which has run through five editions, the two last, published in 1888 and 1892, being revised by Colonel Joshua Duke. He also compiled "The Muree Director," 1889, and "The Muree Handbook," 1870.

SURGEON MAJOR ALFRED ADAMS MANTELL, Bengal Medical Service, retired died at Bithampton, Bath, on 22nd August 1911. He was born in 1830, educated at the London Hospital and took the diplomas of M.R.C.S. and L.S.A. in 1853 and the degree of M.D., St Andrews, in 1855. He entered the I.M.S. as Assistant Surgeon on 4th January 1855, became Surgeon on 24th January 1867, and Surgeon Major on 1st July 1873, retiring on 5th January 1877. The Army Lists assign him no war service.

LIEUTENANT COLONEL JOHN LAWRENCE VAN GEYZEL, of the Madras Medical Service, retired on 9th July 1911. He was born on 19th June 1857, educated at Aberdeen University, where he took the degrees of M.B. and C.M. in 1879, and entered the I.M.S. as Surgeon on 2nd October 1880, becoming Surgeon Major on 2nd October 1892, Lieutenant Colonel on 2nd October 1900, and reaching the selected list on 1st July 1908. For the last twenty five years he had held the appointments of Professor of Chemistry and Chemical Examiner at Madras, an unusually long time for an officer of the I.M.S. to hold one appointment, and a great contrast to the kaleidoscopic changes among the holders of the same post at Calcutta. The Army Lists assign him no war service.

The question has often been discussed whether an officer holding the appointment of Chemical Examiner is eligible for promotion to the administrative grade. Medical Officers holding certain appointments, usually of an wholly non professional nature, such as those in the Mint and in the Botanical Gardens and the few who have held such appointments as Political Agents have always been held to be ineligible for promotion. There has certainly never been any ruling barring Chemical Examiners from promotion. But it appears that no officers holding that post ever had been promoted, until Colonel Grant reached the rank of Colonel last January. As a matter of fact, most officers who have held the post of Chemical Examiner have retired before attaining a length of service in which any question

of promotion could arise, Lyon and Bury in Bombay, Carter in the Punjab Muzamara and Warden in Bengal. In the United Provinces the Chemical Examination has usually been held by an officer who was not a member of the service, Mr. Hankin, and his predecessor, the late Dr. Murray Thompson.

MESSRS SMITH ELDER AND CO. will publish, early next year a supplementary volume of the *Dictionary of National Biography*, containing memoirs of men of note who have died between January 1901 and December 1910. The names of the following officers of the I.M.S. will be included, we believe that Mr. D'Aicy Power, of the staff of St. Bartholomew's Hospital will contribute their memoirs.

J. M. Cunningham
Sir Joseph Fayrer
Sir William Guyer Hunter
W. W. Ireland
Sir George King
W. S. Playfair
S. C. Townsend

CAPTAIN HORACE HARVARD KIDDLE, of the R.A.M.C., was placed on temporary half pay, on account of ill health, on 2nd September 1911. He was born on 20th October 1877, took the diplomas of M.R.C.S. and L.R.C.P., London in 1902, and entered the I.M.S. as Lieutenant on 1st September 1902, becoming Captain on 1st September 1905, and exchanging into the R.A.M.C. on 18th December 1907, with Captain W.H. Odium.

AT THE QUINCENTURY of St. Andrews University, in September last, a number of honorary degrees were conferred on various men of distinction. Among them, that of LL.D. was given to Lieutenant Colonel D. Prain formerly of the Bengal Medical Service from which he retired, after some twenty years of service in the Ceylon Botanical Gardens, first as curator of the Herbarium and afterwards as Superintendent on 31st July 1906. Lieutenant Colonel Prain already holds several scientific distinctions. His own University, Aberdeen, conferred its LL.D. upon him in 1900, eleven years ago. He became a fellow of the Royal Society in 1905 and received the C.I.E. on 29th June 1906 and the Swedish order of the Polar Star in 1910. Since December 1905 he has been Director of the Royal Botanic Gardens at Kew.

CAPTAIN J. A. CRUICKSHANK M.B., I.M.S., is appointed to officiate in the Bacteriological Department, and his service is placed temporarily at the disposal of the Government of Madras.

CAPTAIN J. C. G. KUNHART, I.M.S., is appointed permanently to the Bacteriological Department.

CAPTAIN W. D. H. STEVENSON M.B., I.M.S., is appointed to the Bacteriological Department, *sub pro tempore* Indian Medical Service—*speciales*—Captain A. W. C. Young, is appointed to the charge of Brigade laboratory at Bannu, with effect from 16th August 1911.

Captain G. C. L. Kerans to be Specialist in Ophthalmology, 8th (Lucknow) Division with effect from 3rd August 1911.

The following promotions are made, subject to His Majesty's approval—

Captains to be Majors
27th July 1911

William Ernest McKechnie, M.B.
Harry Diamond Peate
Douglas Henry Fawcett Cowan
William Hancock Lucken
Charles Stewart Lawson, M.B.
Dugald Nairne Anderson, M.B.
Munimath Nath Chundburi, M.B.
Archibald Currie Macmillan, M.D.
John Wallace Dick Megaw, M.B.
Cecil Maurice Goodbody, F.R.C.S.I.
Robert Steen, M.D.
Frederick Fenn Elwes, M.D.
Ernest Albert Chunchward Matthews, M.B.
Lessel Phillip Stephen, M.B.
Leonard Eiskine Gilbert, M.D.
Thomas George Nesbitt Stokes, M.B.
Harry Malcolm Mackenzie, M.B.
Michael Harris Thorpe, F.R.C.S.E.
William O'Sullivan Murphy, M.B.
Cecil Charles Munison, F.R.C.S.F.
E. O. Thurston, F.R.C.S. (Eng.)

(Army Department Notification No. 647, dated the 28th July 1911, so far as it relates to promotions of Captains to Majors, is hereby cancelled.)

This means promotion for the rest of the batch, dated 27th July 1899 and accelerated promotion for all but five of the batch with first commissions, dated 27th January 1900.

WITH the approbation of the Most Hon'ble the Secretary of State for India, the Governor General in Council is pleased to notify that the rules for accelerated promotion published in Army Department Notification No. 282 dated the 7th April 1911, be given retrospective effect and made applicable to—

(1) existing Majors of the Indian Medical Service who have not completed 16 years' service and have not been able to get study leave to qualify for accelerated promotion, and

(2) Majors of the Indian Medical Service who entered the service after the 30th January 1893, and had already taken study leave and qualified for accelerated promotion while in the rank of Major before completing 16 years' service.

THE following promotions are made, subject to His Majesty's approval—

Lieutenants to be Captains, I.M.S., dated 1st August 1911—

Archibald Campbell Munro, M.B.
Ran Nath Chopra, M.B.
Alfred Geddes Tresidder, M.B.
Gordon Gray Jolly, M.B.
Alister Argyll Campbell McNeill, M.B.
Robert Long Gamlen, M.B.
Abdus Sattai Khan
George Frederick Graham, M.B.
Maneck Dhunjishaw Wadia
Taylor David Munison
Sohib Shapoorji Vazirdad
John Joseph Harper Nelson, M.P.
Edward Selby Phipson, M.B.
Fleet Floyd Strother Smith, M.B.
Arthur Jessop Symes, M.B.
Thomas Crawford Boyd

THE Medical Superintendent of the new Radium Institute, in London, about which we all have seen much in the newspapers, is Mr. A. E. Hayward Pinch, F.R.C.S., Captain, I.M.S. (retired).

CAPTAIN J. M. HOLMFS, M.B. (Dub.), I.M.S., has taken the Diploma in Public Health (with honours) at the conjoint examination of the Royal Colleges in Dublin.

THE Commander in Chief in India is pleased to make the following appointments—

Army Headquarters Staff—Colonel H. Hendley, I.M.S., Principal Medical Officer, Sirhind and Jullunder Brigades, to be Deputy Principal Medical Officer, His Majesty's Forces in India, *vice* Colonel D. French Mullen vacated.

Brigade Staff—Colonel D. French-Mullen, I.M.S., to be Principal Medical Officer, Sirhind and Jullunder Brigades, *sub pro tempore*, *vice* Colonel H. Hendley, I.M.S., transferred.

THE undermentioned officers of the Indian Medical Service, having completed their courses at the Royal Army Medical College and at Aldershot, have been finally admitted to the service. Their commissions will bear date the 23rd January 1911—

John Scott
Alister Ralph Spens Alexander
Kinnar Indrajit Singh
Frederick William Hay
George Tate
Sidney Milletton Hepworth
Harry Slater Cormack
George Selby Brock
Krishnan Gopinath Pandala
John Frederick Henry Morgan
Jyoti Lal Sen
Charles Albert Wood

LIFUTENANT K. K. MUKPRJI, I.M.S. is recognised as a specialist in Prevention of Disease, Kohat, with effect from 29th July 1911.

COLONEL WARBURTON (I.M.S. retired) on his retirement from the post of Superintendent of the Edinburgh Infirmary was entertained by the staff. Sir Wm. Turner presiding, and was presented with an album as a memento of the occasion, and the Board of Management presented him with a silver bowl.

THE Viceroy and Governor General has been pleased to make the following appointment on His Excellency's Personal Staff, with effect from the 27th July 1911 —

To be Honorary Surgeon

Colonel J. Smith M.D. I.M.S., Officiating Principal Medical Officer, Secunderabad Brigade, vice Surgeon General P. H. Benson, M.B., I.M.S., retired.

CAPTAIN F. N. WHITE, M.D. I.M.S., is appointed permanently to the Bacteriological Department.

CAPTAIN J. CUNNINGHAM M.D., I.M.S., is appointed to the Bacteriological Department *sub pro tempore*.

THE services of Major V. H. Roberts, I.R.C.S.I. I.M.S., Plague Medical Officer, Punjab, are placed at the disposal of the Home Department.

The services of Major V. H. Roberts, F.R.C.S.E. I.M.S., are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces.

MAJOR A. F. STEVENS I.M.S., Civil Surgeon Hazaribagh, is appointed, with effect from the 11th August 1911, to officiate as Civil Surgeon of the first class during the absence, on leave, of Lieutenant-Colonel F. C. Clarkson, I.M.S., or until further orders.

CAPTAIN H. B. STEPHEN I.M.S., Officiating First Resident Surgeon, Presidency General Hospital, is appointed to act in addition to his own duties as Surgeon Superintendent of that Hospital, during the absence, on privilege leave, of Lieutenant Colonel H. W. Pilgrim, I.M.S.

MAJOR F. S. C. THOMPSON, I.M.S., Superintendent Central Jail, Alipore, got one month's leave from 8th October and Major Watling acted for him.

WHEN Captain Gillet, I.M.S., Superintendent, Central Jail, Burdwan, goes on leave, Major F. H. Watling, I.M.S., will be posted to Burdwan.

On his return from furlough Major J. Mulvaney, I.M.S., is posted as Superintendent of the new Central Jail at Kalighat, Calcutta, which is destined to take the place of the old historic Presidency Jail on the Calcutta maidan which must disappear to make room for the gardens and grounds of the Victoria Memorial.

LIEUTENANT J. C. GILLMAN, I.M.D., got privilege leave in September.

WITH reference to Rule 3 of the rules contained in General Department Notification No. 301, dated the 7th August 1909 Captain S. C. Chakraborty, I.M.S., the officer on Special Plague duty in Bassem Town, is invested by the Local Government with the powers conferred on the Deputy Commissioner by Rules 7, 11, 12, 18, 34, 35, 37 and 39 of those rules.

MAJOR C. R. PEARCE I.M.S. is appointed to hold collateral charge of the Civil Surgeoncy at Maymyo for the period during which Lieutenant Colonel A. O. Evans, I.M.S., is undergoing training in Military duties.

THE services of Major N. P. O'Gorman Lalor, M.B., I.M.S., are placed permanently at the disposal of the Government of Burma for civil employment.

UNDER the provisions of Articles 200 308 (b) and 2-3 of the Civil Service Regulations privilege leave for the period due to him combined with furlough on medical certificate for a total period of six months is granted to Captain R. D. MacGregor, I.M.S., with effect from the forenoon of the 28th April 1911.

MAJOR D. H. F. COWAN I.M.S., Civil Surgeon, was posted to Shahpur, with effect from 2nd August 1911.

THE services of Captain J. G. G. Swan, M.B., I.M.S., are placed permanently at the disposal of the Punjab.

CAPTAIN H. C. KEATES I.M.S., made over charge of the duties of Superintendent of the Jullundur District Jail to Sheikh Dewan Ali, 1st grade Assistant Surgeon, on the forenoon of the 22nd August 1911.

MAJOR E. L. WARD, I.M.S., Superintendent of the Lahore Central Jail, acted as Civil Surgeon of Lahore during the deputation of Lieutenant Colonel W. R. Clarke, I.M.S. till relieved by Captain H. C. Keates, I.M.S.

CAPTAIN K. S. SINGH, I.M.S., was posted as Plague Medical Officer to Kalinal on his return from leave.

MAJOR R. HEARD, I.M.S., M.B. (Dub.), Professor of Midwifery, Lahore, reported his departure on furlough on 15th July.

CAPTAIN H. WATTS I.M.S. has been granted one month's extension of leave by the Secretary of State (U.O.)

LIEUTENANT COLONEL A. W. T. BUIST, I.M.S., was granted 42 days' privilege leave from 7th August and Assistant Surgeon H. Das acted as Civil Surgeon of Umballa.

CAPTAIN J. G. G. SWAN I.M.S., Officiating Civil Surgeon Punjab, has been permitted by His Majesty's Secretary of State for India to convert the period from 2nd May to 11th June 1911, of the furlough granted to him in Notification No. 842, dated 4th November 1909 into study leave.

CAPTAIN M. CORRY, I.M.S., Civil Surgeon, Punjab has been permitted by His Majesty's Secretary of State for India to convert the period from 15th November 1909 to 27th January 1910, of the furlough granted to him in notification No. 851 dated 10th November 1909, into study leave.

THE services of Major H. M. MacKenzie, M.B., I.M.S., are placed temporarily at the disposal of the Government of the Punjab.

THE services of Captain E. C. C. Maunsell, M.B., I.M.S., are placed temporarily at the disposal of the Government of Madras.

CAPTAIN J. B. CHRISTIAN, I.M.S., Civil Surgeon Tippera, is allowed privilege leave for eighteen days under Article 260 of the Civil Service Regulations, with effect from the 9th October 1911.

THIRD GRADE Civil Assistant Surgeon Mr. P. G. Mukherji, L.R.C.P. & S. (Edin.) L.R.F.P. & S. (Glas.), in charge of the Comilla Dispensary, is appointed to officiate as Civil Surgeon, Tippera during the absence, on privilege leave, of Captain J. B. Christian, I.M.S., in addition to his own duties.

THE services of Captain N. H. Hume, I.M.S., are placed at the disposal of the Eastern Bengal and Assam Government with effect from the termination of his leave. Captain N. H. Hume, I.M.S., is appointed to officiate as Civil Surgeon of Jalpriguri.

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

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- The New Physiology A. R. Short (John Wright & Co) Price 4/- 6d
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- P. Daniel's Arthritis (John Bale Sons and Danielson) Price 1/- 6d
Milligan and Wingrove, Diseases of Far (Macmillan & Co) 1/-
- Joint Tuberculosis I. W. Ely (John Wright & Sons) Price 1/- 6d
- R. O. Hobart's Differential Diagnosis (W. B. Saunders & Co)
- Rajputana Medical Report
- Vaccination Reports, Eastern Bengal and Assam
- Hospitals Report Eastern Bengal and Assam
- Taylor's Medicine J. & A. Churchill
- Zuhorsky's Pediatrics
- Ross Domestic Mosquitoes

LETTERS, COMMUNICATIONS, &c., RECEIVED FROM —

- Major Gilchrist, I.M.S., Josooro, Major J. P. Murray, I.M.S., Berham pore, Major C. C. Barry, I.M.S., Rangoon, Major Bruce Seton, I.M.S., Simla, Major S. P. James, I.M.S., Simla, The Hon. Surgeon General G. P. Lukis, Simla, Lt. Col. J. R. Ade, I.M.S., Lahore, Capt. McArrison, I.M.S., Gilgit, Lieut. R. D. MacGregor, I.M.S., Tibet, Dr. Kennedy, Ranchi, Major J. M. Woolley, I.M.S., Andamanas, Lt. Col. Fischer, I.M.S., Dohra Doon, Hon. Mr. G. S. Slack, c/o Barjooling, Capt. N. B. Simpson, I.M.S., Dr. Leake, v.c., Khargpur

Original Articles

A NOTE ON "QUININE WITHOUT TETANUS," AND SOME REMARKS ON TETANUS AND QUININE

BY SIR DAVID SEMPLE, M.D.,
LT COL,

Director, Central Research Institute, Kasauli

In the *Indian Medical Gazette* for September 1911, an article by Major F. A. Smith I.M.S., appended under the heading "Quinine without Tetanus," in which the author rightly emphasises the question of administration of quinine as being of fundamental importance to medical practitioners in malarious countries.

Major Smith's experience is to the effect that much ignorance and many fallacies exist as to the proper method of administering quinine, and he is also of opinion that a recent publication by me "On the Relation of Tetanus to the Hypodermic or Intramuscular Injection of Quinine" (*Scientific Memoirs* by Officers of the Sanitary and Medical Departments of the Government of India, No. 43), only serves to complicate matters by drawing attention to the possibility of quinine when given hypodermically, being the means in some cases of activating latent tetanus infections, a possibility which he is evidently not prepared to accept.

In his article Major Smith points out for the benefit of medical practitioners in malarious countries (a) his own ideas about quinine when given by the mouth, (b) his method of giving quinine hypodermically, and (c) he then offers a few criticisms on tetanus and quinine.

As the statements made by Major Smith under the first two headings are somewhat at variance with the opinions held by the vast majority of medical men practising in malarious climates, and also opposed to experimental facts in regard to the absorption and action of quinine, it is necessary to deal with a few of his statements in detail, after which it will be necessary to say only a few words about his remarks on tetanus and quinine.

It will be as well to follow the three sub-headings of the article referred to, viz., quinine by the mouth, quinine hypodermically, tetanus and quinine.

1.—QUININE BY THE MOUTH

Under this heading Major Smith after mentioning that the salts of quinine usually given require a free acid to dissolve them, and that they can only be absorbed when in solution, makes the following statement, "such absorptions can only take place through the walls of the stomach. As soon as the solution passes into the intestine the drug is precipitated, and no further use can be made of it. It at once follows that the only

time that quinine can be taken with advantage is, when the reaction of the stomach is acid, namely, after a meal, and best after the largest meal of the day. Only when so taken is quinine in the form of pills of any use at all. If the usual doses of quinine given often in disregard of this fact cure cases of malaria or are efficient as a prophylactic, probably one-tenth of such doses given at the economical moment would suffice. By no means does all the quinine taken get into the system—the proportion absorbed requires investigation, but in my opinion one per cent would be above the mark, especially in cases of active malaria, where I find I get more certain results by the hypodermic injection of half a grain of quinine on two consecutive days than by the administration by the mouth of say 30—40 grains a day."

Briefly, the quotation I have given amounts to this, quinine when given by the mouth is only absorbed from the stomach, the best time to give quinine is after a meal and preferably after the largest meal of the day, when it is necessary, only to give one-tenth the amount, one would give at other times, the amount of quinine absorbed when given by the stomach is less than one per cent of what is given, and lastly, hypodermic injections of half a grain of quinine on two consecutive days give better results than 30—40 grains a day given by the mouth.

On reading this, some might be led to think that the question of the absorption of quinine when given by the stomach had been settled for all time, but unfortunately the conclusions arrived at by Major Smith are not the conclusions arrived at by those who have studied the subject, and carried out experiments in order to arrive at the truth. Conclusions based on scientific facts are more likely to point in the direction of the truth than those based on opinions, probabilities, or guess work.

When quinine is given by the stomach, or injected hypodermically, or into the muscles, its appearance in the urine is an indication that the drug has been absorbed, and an early appearance in the urine means that it has been absorbed quickly. This is a fact which can be used to determine the rapidity of absorption of quinine when given by any of the usual channels. The total amount eliminated in the urine after a dose administered by the mouth while fasting, amounts on an average to about 40 per cent according to the results obtained by six independent observers quoted by MacGillivray in his *Scientific Memoir* No. 41, page 14, so that 40 per cent must have been absorbed from somewhere, irrespective of what happened to the remainder. There is a wide difference between 40 per cent and less than one per cent suggested by Major Smith.

The total amount absorbed would be represented by the amount eliminated in the urine plus the amount which had undergone cleavage in the body, but there is no means at present of

estimating this latter amount, except, perhaps indirectly by a process of reasoning based on a minimum lethal dose for animals. There is, however, the fact to fall back upon that very little is passed in the faeces, so absorption when given by the mouth is under normal conditions fairly complete.

In an endeavour to throw some light on the debated points regarding the absorption of quinine, Major MacGilchrist, I.M.S., has lately carried out a series of experiments, and published the result of his work in a *Scientific Memoir*.* In regard to the absorption of quinine from the stomach it would be as well to hear what Major MacGilchrist has to say on the subject, when it will be seen that his conclusions and the conclusions of others quoted by him differ widely from those of Major Smith.

"In fact recent investigators are in harmony regarding the retardation of quinine absorption when administered with or soon after a meal. According to Mariani, the maximum elimination of quinine given while food is in the stomach takes place between the 6th and 12th hours after administration, but, given when no food is in the stomach, between the 3rd and 6th hours."

As food does not, under normal circumstances, remain in the stomach more than five hours, it follows that most of the quinine given with food is absorbed from the small intestine. Subjective symptoms moreover, just like the maximal elimination of quinine in the urine, are at their height between the 3rd and 6th hours when quinine is given while fasting, and between the 6th and 12th hours when given with a meal. That some absorption may take place from the stomach cannot be denied for the following reasons, but such absorption is probably very insignificant."

The reasons referred to will be found given in detail in Major MacGilchrist's *Scientific Memoir*, No. 41, pages 16, 17 and 18. After discussing the subject from the point of view of a number of continental authorities, and given the results of a series of feeding experiments with quinine carried out on guinea-pigs—(1) After fasting 24 hours, and (2) immediately after food, he arrives at the following conclusions—

"There is, therefore, reason to believe that, under ordinary circumstances, most of the quinine administered by the mouth is absorbed from the small intestine, a small amount possibly from the stomach, especially if administered while fasting and in the form of a salt easily soluble in water, and also a relatively small amount from the large intestine. As already mentioned, the absorption of quinine is normally very complete, very little being passed with the faeces after medium doses."

It will be seen from the foregoing that Major Smith's statements on the oral administration of

quinine are directly opposed to the conclusions arrived at by MacGilchrist, and the eminent authorities quoted by him in his *Scientific Memoir*, conclusions be it noted which are the outcome of carefully carried out experiments by experienced workers.

In the face of such evidence it is difficult to understand why Major Smith has chosen the time after the largest meal of the day as the "economical moment" to give quinine. It would also be interesting to know what are the facts upon which an opinion is based that one-tenth of the usual doses of quinine when given at the "economical moment" would have the same effect as full doses given at other times. A saving of quinine is the only possible economy that could result from such treatment, and this would certainly be a false economy as far as the patient is concerned.

Possibly also the question of economy comes in when a hypodermic injection of half a grain of quinine on two consecutive days is recommended in preference to 30 or 40 grains a day given by the mouth. A proper place is allotted to this method of treatment under the next heading.

2 — QUININE HYPODERMICALLY.

This is a method of treatment which Major Smith has practised for some years, and he relates his experience of having treated since 1899, all, except dispensary outpatients, suffering from acute malarial fever, by the hypodermic injection of quinine. During the greater part of that time he used quinine hydrobromate, but latterly he has used quinine bishydrochloride. In addition to describing his method of sterilising the syringe, skin of the patient, etc., he gives in detail his method of sterilising the quinine used, which is as follows—

"If a solution of quinine is being used, that is boiled, if the tabloids, a tea-spoon is sterilised. A tabloid is then placed in the sterilised spoon, 10 to 15 minims of water are poured over it, the whole is boiled over a spirit lamp and the tabloid broken up with the point of a needle. The solution is then drawn up into the syringe and this is placed in carbolic solution until it is quite cool and then injected, the needle being at the same time gradually withdrawn, so that the fluid is distributed along its tract and does not tear up room for itself in one spot. The solution on cooling becomes opaque, but this does not interfere with its efficiency."

In the majority of cases of malaria he finds that two injections at that interval of 24 hours are sufficient to bring the temperature to normal, or in cases of other diseases to eliminate malaria. At each injection he never gives more than 2 grains of quinine in not more than 20 minims of water. He states that the use of larger doses is to be deprecated, as the smaller amount produces the full pharmacological action of the drug. Before attaching any value to the statement

* MacGilchrist Quinine and its salts. Their solubility and absorptibility. Scientific Memoirs by the Officers of the Medical and Sanitary Departments of the Government of India, No. 41.

quoted let us see what effect boiling has on quinine.

It is a well-known fact that boiling produces deleterious changes in some salts of quinine in a few minutes. According to Fluckiger (quoted by MacGilchrist) quinine preparations when exposed to heat and sun light lose water of crystallization and become decomposed, a yellowish brown product being formed which he names "quinectin." In some cases boiling produces this change in a few minutes. Major Smith does not state for what length of time he boiled his quinine preparations in a tea-spoon held over a spirit lamp, but he does state definitely that the solutions he treated in this way became opaque on cooling, and he also adds that this does not interfere with the efficacy of the quinine.

With a view to testing this point I carried out the experiments detailed in Tables I and II. It will be seen from these experiments that a certain lethal dose of quinine bishydrochloride for a guinea-pig when given hypodermically is no longer a lethal dose when treated according to Major Smith's method and that a certain lethal dose for a rabbit when given intravenously becomes non-lethal when treated by the same method. In these experiments there was no haziness after boiling for one minute, slight haziness after two minutes, and marked haziness after three minutes' boiling. When boiled for longer than three minutes the solutions became somewhat opaque on cooling, so Major Smith in order to obtain opacity must have boiled the solutions for longer than three minutes.

It is very evident from these experiments that boiling a solution of bishydrochloride of

quinine in a tea-spoon held over a spirit lamp (Major Smith's method of sterilising quinine) for a longer period than one minute produces changes in the salt which diminish its lethal effect for small animals such as rabbits and guinea-pigs.

Now the object of boiling a quinine solution before injection is to sterilise it, or in other words to destroy any bacteria or spores, especially tetanus spores, which some imagine might be present in compressed quinine tabloids. The destruction of tetanus spores would, I take it, be the main object of those who resort to boiling as a safeguard.

According to Theobald Smith,* the spores of some strains of tetanus resist boiling for as long as from 40 to 70 minutes. Are we then to boil for over one hour in order to be on the safe side, or are we to adopt Major Smith's method and boil until we get a solution which on cooling becomes opaque, and which is then no longer quinine, and might still contain living tetanus spores, if they were ever in the tabloids to begin with, a point which has never yet been demonstrated?

Major Smith finds that, in the majority of cases of malaria, two injections of not more than 2 grains of boiled quinine given at an interval of 24 hours are sufficient to bring the temperature to normal, or, in the case of other disease, to eliminate malaria. This is certainly a comforting discovery for those who live in malarious countries, for it means that now we have malaria, and tetanus after quinine robbed of their terrors by Major Smith's tea-spoon-sterilisation method.

TABLE I

Experiments on guinea-pigs to demonstrate the effects of quinine when boiled and given hypodermically, as compared with unboiled quinine also given hypodermically

No. of experiment	Weight of guinea pig	Salt of quinine used	Amount given	Fluid in which dissolved and bulb given	Length of time boiled	Whether opaque on cooling	RESULTS
1	390 grms	Bishydrochloride	4 grains	Normal saline solution, 4 c.c.	1½ minutes	Traces of haziness	Died after 8 hours
2	370 grms	Ditto	3 grains	Normal saline solution, 3 c.c.	2 minutes	Haziness	Had twitching of muscles after one hour, but this soon disappeared. Survived
3	420 grms	Ditto	3 grains	Water, 3 c.c.	3 minutes	Marked haziness,	Survived, no symptoms
4	430 grms	Ditto	3 grains	Water, 1½ c.c.	3 minutes	Ditto	Survived, no symptoms
5	380 grms	Ditto	3 grains	Water, 1½ c.c.	3 minutes	Ditto	Survived, no symptoms
Controls	425 grms	Ditto	4 grains	Normal saline solution, 4 c.c.	Not boiled	Clear	Died after one hour
6	420 grms	Ditto	3 grains	Water, 30 min.	Not boiled	Clear	Died after 1½ hours
7	380 grms	Ditto	2½ grains	Normal saline solution, 2½ c.c.	Not boiled	Clear	Died after 2½ hours

It will be seen from the results of the control experiments that boiling a solution of quinine until it becomes hazy on cooling markedly diminishes its lethal effects for guinea pigs when given hypodermically.

TABLE II

Experiments on rabbits to demonstrate the effects of quinine when boiled, then allowed to cool and given intravenously

No. of experiment	Weight of rabbit	Salt of quinine used	Amount given	Fluid in which boiled and bull given	Length of time boiled	Whether opaque on cooling	RESULTS
1	1460 grms	Bihydrochloride	$\frac{3}{4}$ grain	Normal saline 0.75 c.c.	1 minute	Clear	Died within 1 minute
2	1230 grms	Ditto	Ditto	Ditto	2 minutes	Slight haziness	Difficulty of respiration for 2 minutes after the experiment, but no other symptoms remained well
3	1400 grms	Ditto	Ditto	Ditto	Ditto	Marked haziness	Survived, no symptoms
4	1470 grms	Ditto	Ditto	Distilled water 0.75 c.c.	3 minutes	Ditto	Ditto
5	1330 grms	Ditto	Ditto	Ditto	Ditto	Ditto	Giddiness for half a minute after the experiment. No other symptoms remained well
Controls	1465 grms	Ditto	Ditto	Ditto	Not boiled		Died within 1 minute
	1520 grms	Ditto	Ditto	Ditto	Not boiled		Ditto

The amount of quinine used for these experiments is the least amount which (when not boiled) invariably kills a 1,500 gramme rabbit when given intravenously. It will be seen from the results of the experiments recorded in this table that boiling a solution of quinine until it became hazy on cooling markedly diminishes its lethal effects for rabbits when given intravenously.

of giving two small doses of boiled quinine hypodermically

Personally I do not think that a hypodermic injection of 2 grains of quinine in a solution which had been boiled until it became opaque would be likely to give rise to tetanus, and I gravely doubt whether such a dose given to an adult would ever cure a case of malaria, and it certainly could not produce the full pharmacological effects of the drug.

Owing to the facts that quinine has a destructive action on the tissues at the seat of injection, and that none of the salts of quinine stand sterilisation well, one would think that these drawbacks would be enough to condemn this method of administration, but in addition we have also the fact that the salt unless given in a fully dilute form may be precipitated to the extent of over 60 per cent at the seat of injection. I have known of several cases at post-mortem examinations where masses of quinine were dug out from the sites where injections had been given to the patient before death.

MacGilchrist as the results of his own experiments on guinea-pigs, and the work of others, sums up the position of subcutaneous or intramuscular injections of quinine in the following words "As regards guinea-pigs, the lethality (and therefore absorability) of quinine by the several modes of administration is in the following order, beginning with the most lethal mode of administration, (1) subcutaneous injection in extreme dilution (1 in 150), (2) oral administration during fasting, (3) oral administration with or immediately after food, and (4) subcutaneous

injection in the strengths generally used for hypodermic injection (1 in 2, and 1 in 8). The oral administration of quinine also affords more prompt therapeutic action of the alkaloid than does the subcutaneous, the subcutaneous injection of quinine in extreme dilution (1 in 150) being excluded for clinical reasons. Further, subcutaneous injections are followed by various complications and mutilations. Intramuscular injections are attended by the same draw-backs as subcutaneous proper, and although ulceration rarely occurs, they are more liable than the latter to be followed by thrombosis and paralysis.

The harmony between the results of various observations on man and those of my experiments on guinea-pigs justify the inference of general applicability that subcutaneous and intramuscular quinine injections in solutions of the usual strength (1 in 1 to 1 in 10) are inferior to quinine by the mouth in rapidity of action and thoroughness of absorption, and that they are liable to be attended by grave complications, mutilations and dangers. Quinine and its salts are, moreover, fundamentally unsuited for hypodermic use. This mode of quinine administration should therefore be abandoned.

The results of my own experiments on rabbits and guinea-pigs with hypodermic and intramuscular injections of quinine harmonise with the conclusions which I have quoted.

3.—TETANUS AND QUININE

At the outset of his criticisms under this heading Major Smith tendered the following advice— "In view of the usefulness of quinine adminis-

tered hypodermically, it behoves every practitioner in India to carefully weigh all that Sir David Semple says in his Scientific Memoir (on "The Relation of Tetanus to the Hypodermic or Intramuscular injection of Quinine") published by the Government of India. An improvement in the introductory wording of this advice would be, "In view of the risks incurred when quinine is administered hypodermically it behoves every practitioner in India carefully to weigh, etc.", but even apart from my suggested improvement I am very pleased to recommend the advice which Major Smith has tendered to every practitioner in India.

I would also recommend every practitioner in India carefully to weigh all that Major Smith says in his article "Quinine without Tetanus," published in the *Indian Medical Gazette* for September 1911, and especially to reflect on what he says under the first two sub-headings of his article. While on the subject of advice I would also recommend those who may take the trouble to read my Scientific Memoir to be more careful than Major Smith has been to grasp the meaning of my experiments with "washed tetanus spores" and quinine, a task which I think most readers will find to be comparatively easy.

I should not expect anyone who had carefully studied my Memoir to reproach me with not finding tetanus spores in guinea-pigs (which had received no quinine) in any other part of their tissues, except at the site where "washed tetanus spores" had been injected, yet Major Smith remarks "It is not claimed that they can be recovered from any other part of the body, nor that when a man becomes infected with dormant tetanus spores which produce no symptoms, that he harbours the spores in anything like the same numbers as are injected into the guinea-pig." "Washed tetanus spores" injected into guinea-pigs which receive no hypodermic injections of quinine are never found anywhere else in the tissues except at the site of injection, naturally, therefore, I do not claim that they can be recovered from any other part of the body. Of course the intestinal tract of man and animals may harbour tetanus infection under natural conditions, but this is a different question. I would like to know how Major Smith would attempt to find out when a man becomes infected with dormant tetanus spores which produce no symptoms, and how he would proceed to draw a comparison between the number of spores in such an infected man and the number injected into a guinea-pig. There are some questions which require a lot of ingenuity to solve, and these two conundrums might be included amongst them. If animals can be proved experimentally to harbour tetanus spores in their tissues for months, surely it is reasonable to infer that human beings may also harbour tetanus spores for months, yet Major Smith considers this astounding statement. It was not, however, considered an astounding statement when first made

by Vincent of the Pasteur Institute, Paris, in 1904, who explained the origin of "spontaneous" tetanus as due to latent tetanus spore infections being stirred into activity by a heatstroke, a chill, hypodermic injections of quinine, or other depressing influences.

In the 10 cases of tetanus following the hypodermic injections of quinine brought to my notice, Major Smith objects to my not publishing all details of these cases. Surely he must have known that the cases were not under my care, and that it is not usual to publish other people's cases. I am, however, in a position to state that, with the exception of one case, no aseptic precautions were omitted in carrying out the injections, and even in this case the quinine was to some extent to blame, although the water in which it was dissolved contained tetanus spores.

It will be asked what evidence is there for attaching any blame to the quinine in this particular case, seeing that the water was infected with tetanus to begin with. A sample of the distilled water used to dissolve the quinine given hypodermically to this patient was sent to me for examination, when in addition to other tests I carried out the following experiments on guinea-pigs, and the results of these experiments will serve to clear up the question under discussion.

Experiment 1—Two guinea-pigs were each given a hypodermic injection of 2 cc of a sample of the distilled water used to dissolve the quinine for the patient referred to. Both animals remained well.

Experiment 2—Two guinea-pigs were each given a hypodermic injection of half a grain of quinine dissolved in 2 cc of a sample of the same water. Both these guinea-pigs developed tetanus.

Experiment 3—Two guinea-pigs were given a hypodermic injection of 1/10 grain morphia. In one case the morphia was given in 2 cc and the other in 1 cc of the sample of water referred to. Both animals remained well.

Experiment 4—Two guinea-pigs were each given a hypodermic injection of 1 grain of the same sample of quinine used for experiment No 2, but dissolved in normal saline solution. With the exception of sloughing at the seat of injection both animals remained well. This experiment exonerates the quinine used for experiment No 2 from any suspicion of containing tetanus spores.

Experiment 5—A growth of tetanus was obtained from the sample of water used for experiments 1, 2 and 3.

In my opinion the results of these experiments are very strong evidence that quinine was the agent which made a tetanus infection possible in this case, and that a morphia injection made up with the same water and given to a patient would in all probability not have been followed by

tetanus It requires something more than the introduction of tetanus spores into the living tissues to produce tetanus, and evidently quinine can readily supply the accessory conditions required for the spores to germinate.

In this connection I might also refer to the experiments recorded in Tables X and XI of my Scientific Memoir No 43, pages 42 to 45, from which it will be seen that washed tetanus spores when mixed with quinine or lactic acid, and given hypodermically to guinea-pigs produce tetanus, but when the spores are mixed with a non-nitritating solution of morphia, or normal saline solution, the animals remain well. These experiments taken in conjunction with the experiments carried out with the tetanus-infected water recorded above, demonstrate clearly the favouring influence of the hypodermic injection of quinine in the production of tetanus when a tetanus-spore infected fluid is used, as compared with morphia given under similar circumstances, and they also afford a reasonable explanation as to the rarity of tetanus following hypodermic injections other than quinine.

Major Smith states that he gives at least 50 injections of quinine for one of morphia, and on this account he doubts the correctness of the statement that morphia injections are more frequently given than quinine injections. There are exceptions to most rules, so I take it that Major Smith's practice of giving small doses of boiled quinine hypodermically to all his cases of malaria is an exception to the general rule. We all know that hypodermic injections of morphia are given probably thousands of times for once that quinine is given, but can any one mention 10 cases of tetanus following morphia injections?

In the literature on the subject I can find only one case mentioned, there may be others, but, as Major Smith remarks, the injuries for which the morphia is often given would be a reasonable source of infection, and would exonerate the morphin.

The remainder of Major Smith's remarks show that he has failed to grasp the meaning of the experiments given in my Memoir, and as an example of this I may quote his concluding remarks "The only conclusion that can be drawn from the Memoir is that if tetanus spores are injected, there is a slightly less chance of a tragedy if quinine is withheld, but nothing has been shown to justify us in running the risk of withholding the hypodermic injection of quinine in every case where it is indicated, provided it is given antiseptically."

When he refers to tetanus spores I presume he means "washed tetanus spores" and in this case my experiments demonstrate clearly that there is no chance of a tragedy when quinine is withheld, but a very considerable chance of a tragedy when quinine is given, and that tetanus will follow for certain when the spores are mixed with quinine, but not necessarily when they are mixed with a morphia solution or normal saline

Evidently Major Smith puts a very liberal interpretation on not withholding hypodermic injections of quinine in every case where they are indicated, for he tells us that he has treated all his cases of malaria (except dispensary outpatients) since 1889 by this method, and he also remarks, "In addition during the last five years, in order to prevent a possible recurrence of malignant malaria, or any fresh infection, I have given a hypodermic injection to every patient who has been anaesthetised, just before he comes round, and on two consecutive days to all inpatients suffering from acute diseases, such as pneumonia, typhoid fever, small-pox, etc."

I should certainly not recommend any one to withhold a hypodermic injection of quinine from any case where it was indicated, but on the other, I should be very sorry to recommend this method of giving quinine as a routine measure in all cases. I should confine myself to the exceptional cases in which quinine by this method is indicated, and these I should safeguard by a dose of tetanus antitoxin, especially in those localities of tropical countries where tetanus frequently occurs.

It is evident from Major Smith's account that very small doses of a solution of quinine boiled until it became opaque on cooling did not do his patients any harm, and it did not give them tetanus but would such treatment cure or prevent malaria? A small dose of quinine after being treated in such a way that it was no longer quinine, and then given hypodermically, would not be likely to have any influence in bringing about a tetanus infection, and it would certainly have very little influence in curing or preventing malaria.

4.—THE REVIEWER OF TETANUS AND QUININE REVIEWED

A review of my Scientific Memoir No 43, "On the Relation of Tetanus to the Hypodermic or Intramuscular Injection of Quinine" appeared in the *Indian Medical Gazette* for September 1911. On reading over what the reviewer said I came across some remarks which I propose to deal with not only for the information of the readers of the *Indian Medical Gazette*, but possibly also for the benefit of the reviewer. I shall quote from the points requiring attention and deal with them in the following order—

(a) "Whatever lethal effect quinine may have on tetanus spores a point which has never yet been settled—it certainly can have little effect until dissolved." These remarks were made when the reviewer came across a passage in my Memoir where I stated that quinine being a protoplasmic poison is not likely to harbour living tetanus spores before being dissolved. When making this statement I was thinking of compressed tablets of the kind generally used for hypodermic injections, and not loose powdered quinine.

In order to test the point whether tetanus spores could survive in the interior of a compressed tabloid of quinine bishydrochloride, I carried out the following experiments as a preliminary to further test-experiments which I hope to carry out at an early date —

1 A five-grain tabloid of quinine bishydrochloride was taken and a hole drilled into the centre. A measured amount of "washed tetanus spores" after being thoroughly dried at a temperature of 37° Centigrade was then placed in the centre of the tabloid, and powdered quinine prepared from a similar tabloid pressed down tightly on to the spores, and the drilled hole carefully filled up in this way. The tabloid was then placed in a sterile tube, and allowed to remain in a dark cupboard at room temperature for a week, after which it was dissolved in a bulk of 5 cc of normal saline solution, and four guinea-pigs were each injected with 1 cc. None of these animals developed tetanus.

2 *Control experiment* — A similar amount of "washed tetanus spores" prepared from the same culture, and at the same time as those used for the interior of the tabloid, were placed in a sterile test tube, and slowly evaporated to dryness at a temperature of 37°C . The tube was then placed in a cupboard at room temperature for a week, when a 5-grain tabloid of quinine bishydrochloride was dissolved in it in a bulk of 5 cc of normal saline solution, and 4 guinea-pigs each injected with 1 cc. All 4 animals contracted tetanus on the second day, and died on the third day.

3 A control guinea-pig injected with the same amount of a sample of the "washed tetanus spores" used for experiments 1 and 2, remained well, which proved that the spores had been completely freed from toxin.

It is reasonable to infer from these few experiments that tetanus spores probably do not survive for long inside a compressed quinine tabloid, but before finally settling the point further experiments are indicated. I may also mention that after numerous attempts I have never yet succeeded in obtaining a growth of any kind from compressed quinine tabloids when precautions were taken to avoid contaminations from the outside of the tabloids. (b) The reviewer complains that I have "merely tested the prophylactic power of antitoxin under the most favourable conditions for its effective action," and that "there is no experimental proof given of the duration of passive immunity, or that one injection of serum would render several daily injections of quinine safe and even granting that immunity may last so long, there is always the possibility—almost certainty—of malarial relapses and reinfection, with the consequent danger of anaphylactic phenomena, both in their acute fatal and commoner subacute forms."

These remarks savour of extreme caution, and a tendency to err on the right side.

Let us see in which direction the truth is to be found, and how it is to be arrived at by means of experiments.

The anaphylactic phenomena referred to may be dismissed in a few words, for it is well known that serum can be injected into animals once a week for months without anaphylactic phenomena ever appearing, and it is generally believed that it is much more difficult to render man supersensitive to the effects of serum than it is in the case of animals. Besides it requires an interval of about 12 days or longer to elapse after an animal such as a guinea-pig receives a sensitising dose of serum before it becomes supersensitive to a second dose. We can also fall back from the experience gained from the numerous instances in which antidiphtheritic serum is given to children at various intervals without any accidents happening, and certain other serums, such as anti-tubercle serum, and anti-rheumatic serum which are constantly being used at intervals of days and weeks without any ill-effects. Practically speaking it is a negligible quantity as far as man is concerned, and need not interfere with serum prophylaxis. Possibly my reviewer was thinking of what is generally referred to as "serum sickness," accompanied by pains in the joints and mucous membranes, and appearing about the 10th day in 8 or 10 per cent of cases after a single dose of serum, but even this need not give any cause for anxiety when it does appear. It is only necessary to mention to patients that there is such a thing as "serum sickness," so that they may not be alarmed should it appear. As regards the duration of passive immunity after a dose of serum, it is common knowledge and accepted as a fact that it may last from a fortnight to six weeks or longer. Taking the shortest period, viz., a fortnight, this would give ample time to give a patient as many hypodermic injections of quinine as it would be good for him to receive. The question of the efficacy of antitetanic serum was settled by Roux and Vaillant years ago. These observers showed that "antitetanic serum does not cure tetanus after it has set in, but that it infallibly prevents it." It is also well known that there is no antitoxin more active than antitetanic serum.

The experiments recorded in Table III serve to demonstrate the prophylactic power of tetanus antitoxin under much more unfavourable conditions than are ever likely to be met with in actual practice. They also demonstrate clearly that the period of protection even under the very adverse conditions tested lasted for a fortnight at least.

(c) The reviewer complains that "the chapter showing the effects of quinine on small animals is disappointing," and he pretends to think that a dilution of quinine of the strength of 1 grain in 1 cc of saline is "a curious mixture of two systems of weights and measures." He also mentions that "there is a difficulty in arriving at a minimum lethal dose due to the author not accepting the term in its technical sense."

TABLE III

Experiments on guinea-pigs to prove the efficacy of antitetanic serum in warding off tetanus infections when quinine is given hypodermically

No. of experiment	Date of hypodermic injection of antitetanic serum	Date of hypodermic injection of quinine	Date of hypodermic injection of a virulent tetanus culture	Result
1	Oct 11th 3 c.c.	Oct 13th, 1 grain Oct 15th, 1 grain Oct 18th, 1 grain Oct 21st, 1 grain Oct 25th, 1 grain	Oct 13th, 3 c.c.	Remained free from tetanus
2	Oct 11th 3 c.c.	Oct 24th, 1 grain Oct 26th 1 grain Oct 27th, 1 grain	Oct 25th, 3 c.c.	Ditto
3	Ditto	Ditto	Ditto	Ditto
4 Control of tetanus culture used	Nil	Nil	Oct 13th, 3 c.c.	Developed tetanus on the 2nd day, and died on the 4th day

These experiments prove that tetanus antitoxin confers a passive immunity on guinea-pigs for 14 days at least against the injection of a dose of tetanus culture lethal for non protected animals, and that the immunity is not upset when several injections of quinine are given in the meantime (Expt 1)

When the reviewer made these statements he must have overlooked the opening paragraphs of Chapter III, page 13, in my Memoir, where it is stated, "In these experiments no attempt was made to follow up the excretion of quinine from the systems, or to enter minutely into its physiological effects. The principal objects were —

(1) To arrive at a dose, which, without proving fatal, would produce well marked visible effects,

(2) To arrive at some conclusion as to what the local effects of quinine are when given hypodermically

(3) To prove whether the local and general effects of quinine when given hypodermically have any influence in favouring tetanus infections

(4) To obtain information as to whether animals can withstand larger doses by the stomach than hypodermically

(5) To gain some information on the effects of quinine when given intravenously

It will be seen from this that a determination of the minimum lethal dose for small animals was not by any means the primary object of my experiments, but nevertheless it is clearly proved and definitely stated that when quinine bishydrochloride is used, the smallest dose that will

never fail to kill is, (a) for guinea-pigs, when given hypodermically, 1 grain per 150 grammes of weight, and that an increase of from $\frac{1}{3}$ to $\frac{1}{4}$ of this amount will invariably kill when given by the stomach, (b) for rabbits, when given hypodermically, 6 grains per kilogramme of weight, and when given by the stomach the amount is at least double the hypodermic lethal dose

A minimum lethal dose for a guinea-pig or rabbit of a certain weight is not necessarily a lethal dose for other guinea-pigs or rabbits of the same weight. The smallest dose which will never fail to kill any guinea-pig or any rabbit of a certain weight may be more than a minimum lethal dose for some of these animals. The smallest dose that may kill, and the smallest dose which will never fail to kill are two different things

As regards the "curious mixture of two systems of weights and measures" referred to, viz., "1 grain to 1 c.c." I can assure the reviewer that it is a most convenient mixture for any one administering quinine either to man or animals by means of a syringe, on account of the fact that English preparations of quinine are sold in grains, and the best syringes and the most convenient measures are graduated on the c.c. scale. Any other combination of weights and measures would have no advantages over grains per c.c.

(d) An important point referred to by the reviewer is the following — "In the intravenous experiments where the majority of animals died within one minute from asphyxia, the quinine was in far too great a concentration (1 grain to 1 c.c.), and would undoubtedly form a dense precipitate inside the blood vessel at the site of injection, and the mode and rapidity of death suggests embolism."

The lethal effect of quinine when given intravenously to rabbits depends on the amount given at a single dose and not on the dilution in which it is given. The question of the precipitate referred to above does not come in when intravenous experiments are carried out, although a precipitate can be easily demonstrated when a concentrated solution of quinine is added to serum in a test tube. A careful study of the results of the experiments recorded in Table IV should convince any one that whatever else the cause of death may have been due to in experiments 1, 2 and 3, it could not have been due to a precipitate inside the blood vessel at the site of injection, as the dilution of quinine used, namely, 1 in 150, 1 in 160, 1 in 200 do not give rise to any precipitate when added to serum *in vitro*. A rabbit of a certain weight which receives intravenously the least amount of quinine which invariably kills, dies just as quickly and with the same symptoms irrespective of whether the quinine is given in a dilution of 1 in 200, or in the proportion of 1 grain to 1 c.c. It is the amount of quinine given at a single dose which is the lethal factor and not the dilution in which it is given.

TABLE IV

Experiments on rabbits to demonstrate the effects of quinine when given intravenously in very weak solutions, as compared with strong solutions also given intravenously

No of experiment	Weight of rabbit	Salt of quinine used	Amount given	Fluid in which dissolved	Dilution used and bulk given intravenously	RESULTS
1	1520 grams	Bihydrochloride	3 grain	Normal saline solution	1 in 150 (6 6 c.c.)	Died within one minute
2	1500 grams	Ditto	Ditto	Ditto	1 in 160 (7 c.c.)	Ditto
3	1500 grams	Ditto	Ditto	Ditto	1 in 200 (9 c.c.)	Ditto
4 Control	1470 grams	Ditto	Ditto	Ditto	1 in 17 (0.75 c.c.)	Ditto
5 Control	1560 grams	Ditto	Ditto	Ditto	Ditto	Ditto
6 Control	1450 grams				9 c.c. Normal saline solution	No symptoms, remained well
7 Control	1490 grams				10 c.c. Normal saline solution	No symptoms, remained well

The amount of quinine used for experiments 1, 2, 3, 4 and 5 (3 grain) is the least amount which invariably kills a 1500 gramme rabbit when given intravenously. It will be seen from these experiments that it is just as rapidly fatal when given in dilutions of 1 in 150, 1 in 160, and 1 in 200 as in a dilution of 1 in 17 (1 grain to 1 c.c.). It will also be seen from experiments 6 and 7 that the bulk of the fluid in which the quinine was given had no influence on the fatal effect.

(e) The last point worthy of notice reads as follows —

"In Chapter VI an endeavour is made to show under what circumstances hypodermic injections of quinine are necessary." Here I think the reviewer gives me credit for more than I attempted. The object of Chapter VI was to draw attention to the fact that there are exceptional cases where hypodermic injections of quinine may be indicated, and in these exceptional cases a dose of antitetanic serum would be a safeguard against tetanus. The words I used in drawing attention to such cases were, "In countries where severe forms of malaria occur, and in those cases where quinine cannot be tolerated by the stomach, or for other reasons, it may be sometimes necessary to give it hypodermically. Those who have had an extensive experience in treating malaria in tropical climates assert that there are cases in which it is possible to save the patient by hypodermic injections when it would be impossible to do so by the ordinary methods of administration of quinine. It is in such cases, and not as a routine measure in those who can tolerate quinine by the stomach that hypodermic injections are justifiable." I do not think my one reading over these few remarks would be justified in interpreting them to mean that I had endeavoured to enter into the details of the circumstances in which hypodermic injections of quinine are necessary, but it would appear from the reviewer's remarks that I had made an attempt to do so. The subject was outside the task which I set myself, and naturally therefore I did not investigate it.

In conclusion I may mention that the results of the experiments recorded in this paper render any further comment on my part unnecessary.

THE RADIO ACTIVITY OF SOME THERMAL SPRINGS IN THE BOMBAY PRESIDENCY *

BY THE REV A STEICHEN AND THE REV H SIERP,
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Two important facts have drawn the attention of medical men to radio-activity. The first fact was the observation that radium rays affect the tissues of the human body. For like Rontgen-rays they are able to cause serious injuries to the skin. The first man who tried to utilise radium rays for medical purposes was Dr Danlas of the St Louis Hospital in Paris, who used them successfully to cure skin diseases. The treatment of cancer, lupus, and such like diseases with radium rays has also been very satisfactory †.

The second fact was the discovery of radium emanation in the thermal springs. To-day we know with sufficient certainty that radium emanation plays an important part in the sanitary effects of thermal waters.

It has been pointed out on the one hand that certain thermal springs with very pronounced physiological effects do not show any particular chemical composition (Bad Gastein, Plombière)‡ and on the other hand, that in the case of certain thermal springs of like quality the medicinal efficacy is approximately proportional to the amount of emanation in the water §.

Moreover, it is generally believed that certain thermal waters lose their efficacy some time after

* A paper read at the Bombay Medical and Physio. Society (Vol XV, 1911).

† Mad Curie, *Traité de Radioactivité*, Paris, 1910, Vol II, p 266. Ruthenoford, *Radiotaktivität*, Berlin, 1907, p 225.

‡ Mad Curie 1 c, Vol II, p 498.

§ Phys Zeitschi, 1911, Vol XII, p 114.

they have been collected from the spring. This fact would easily be accounted for if the efficiency of the water was due to radium emanation, since this decays within a certain interval of time.*

Also, it has been shown that up to a certain degree the effects produced by thermal waters can be obtained with ordinary water if radium emanation is added to it. This fact becomes intelligible if we remember that in general radium emanation acts upon the organism, in particular that it increases the activity of several ferments of the body, especially diastase, pepsin, trypsin, etc.

Finally, it has been shown by Gudzeit† that the monosodium urate, the only salt of uric acid present in the blood, exists in water in two isomeric forms, the first (a-salt) is more soluble, but less stable than the other form b-salt. The same is true for artificial and probably also for natural serum. Small quantities of radium emanation transform the stable form into the unstable and more soluble form ‡.

India is rich in thermal springs. In the "Memoirs of the Geological Survey of India," § R D Oldham gives a list of the thermal springs of India known in the year 1882. He enumerates 301 groups of hot springs, a great many of which are to be found in the Bombay Presidency, and even in the neighbourhood of Bombay itself.

About the middle of last century the water of many of the hot springs was analysed by order of the Supreme Government, dated 28th July 1852. The results of the analysis, as far as the springs in the Bombay Presidency are concerned, are reprinted in the "Transactions of the Medical and Physical Society of Bombay" ||.

During the autumn vacations of 1910 we made several excursions to the hot springs at Tuwa, Lasundia, and Vajrabai with a view to studying the radio-activity of the waters. The results of our observations will be given in this paper. In our investigations we used the apparatus of Th Wulf ¶. We invariably proceeded as follows. The metallic rod was charged to a negative potential of about 400 volts, the apparatus left alone for about 10 minutes and then the loss of potential was observed. After that a known quantity of water was introduced into the bottle, violently shaken, and the air made to circulate through the condenser by means of a pump, an operation which lasted from one to two minutes. Then the loss of potential was again observed at short intervals of time. These observations which lasted for about 20 minutes, give the loss of potential due to the emanation in the water and to the

radio-active deposit formed in the condenser. Finally the emanation was driven out by removing the round vessel from the apparatus and exposing the different parts of the condenser for a short time to the wind, the rubber tubes having also been removed.

Next the condenser was built up again, the holes in the round vessel closed and the loss of potential observed. Thus we found the loss of potential due to the radio-active deposit alone.

The observations are arranged in tables in the following way —

In the first column St T (standard time), the time of the observations is given in hours and minutes, in the second column, I (interval), the intervals of time between the successive readings, in the third column, V, the volts indicated by the electroscope are to be found. Under (a) we put the observations before introducing emanation into the condenser, under (b) the readings when there is emanation in the apparatus, finally under (c) the readings after the emanation has been removed. This arrangement is the same in all the tables.

In order to be able to compare our observations with those of other observers, we determined the saturation current in the condenser due to the emanation alone, and reduced it to 1,000 cm³ of water.

The current is measured in Mache-units, one Mache-unit being equal to 0.001 electrostatic units. For the saturation current we use the equation —

$$1,000 \text{ elst} = 1,000 \times \frac{1,000}{w} \times \frac{l_1 + l_2 + l_3}{l_s} \times \left(1 + \frac{\alpha w}{l_1} \right) \times \left(1 - 0.52 \frac{O}{R} \right)^{-1} \times \frac{C V}{300}, *$$

where

w = amount of water in the bottle,

l_1 = , , an , , " pump and
 l_2 = , , , , " in the tubes

l_3 = , , , , condenser

α = co-efficient of absorption of emanation in the water, α is a function of the temperature of the water

V = loss of potential in one second due to emanation alone

O = inner surface of the condenser

R = volume of the condenser

C = capacity of the system = 3.93 cms

$\left(1 - 0.52 \frac{O}{R} \right)^{-1} C$ is a constant and equal to 0.0182

In order to find the loss of potential due to emanation alone we used the method given by

* Mad Curie, 1 c, Vol II, p 493.

† F Gudzeit ZS f phys Biol Vol 63, p 455-74, Jouin Chem Soc, 1910, Abstracts II, p 140.

‡ Phys Zeitsch, 1911, Vol XII, p 143.

§ Vol XIX, part II.

|| New Series, No V (for the year 1859) p 242.

¶ Phys Zeitsch Vol VIII, pp 246 and 527 Vol X, p 251, Vol XI, p 1090.

* F Kohlrausch, Lehrb d Prakt Physik, 11 ed (1910), p 657.

Kohlrusch, l.c. First we determined the loss of potential due to emanation and the induced radioactivity, then the loss of potential due to the radio-active deposit alone. The difference of these two values we take as the loss of potential due to emanation alone.

1 THE THERMAL SPRINGS AT TUWA.

Lat $22^{\circ} 43'$, Long $73^{\circ} 30'$ *

A —General Remarks

The springs are about half a mile from the railway station of Tuwa, on the line from Cambay to Godhra (Panch Mahals). There are two places where hot springs rise to the surface, the one in a river-bed, the other in a marshy ground about 20 m long and 17 m large. All over this area gas and water issue at numerous places. We examined only the springs on this area. The temperature of the springs varies from 28°C (83°F) to 67°C (153°F). The springs are so numerous and often so small that it would have been a hopeless task to take the temperature of every single spring. However, we measured the temperature of a limited number of springs, large enough to give an idea of the distribution of temperature. If the area be divided into four parts by two straight lines bisecting the four sides then the hot springs will be found, roughly speaking, in one quarter, the cold springs occupying the rest of the surface. Large earthen jars are let into the soil to collect the water. But there is water and gas issuing between the jars as well. The whole area conveys the idea of a pair of silted springs, the one yielding hot and the other cold water, the water and the gas now escaping through the silt as best they can. The water of the brook originating from this area has a temperature of 41°C (106°F). Close to the springs there is a small temple, and the ruins of a much larger one. All round the springs, within a circle of 500 to 600 paces the water is said to be bitter, beyond this circle it is sweet. All the springs whether cold or hot yield water and gases. The springs are considered sacred.

B —The Radio-activity of the Springs

We examined only two springs remarkable for their temperature. The temperature of the one is 67°C (153°F), that of the other 28°C (83°F).

We visited the springs first in October 1910 and made preliminary measurements. The final measurements were made in December.

1 OBSERVATIONS OF THE HOT SPRING

(a) *First Observation* —Made at Tuwa on the 13th December 1910.

The apparatus was put in the shade, about 40 m from the spring. The temperature of the air

was here 28°C (83°F). 50 cm³ of water were collected in the bottle, the volume of which was 1,000 cm³. The observation with the water began 18 minutes after the latter had been collected. The results of the observations are given in Table I.

TABLE I

	St	T	I	V		St	T	I	V	
(a)	11	38 7	0	417		12	17	15 2	184	
	11	57 8	19 1	410 5		12	17 7	15 9	174 3	
(b)	12	1 8	0	402 7		12	18 5	16 7	163 4	
	12	2 5	0 7	391 2		12	19 2	17 4	151 5	
	12	3 2	1 4	385		12	20	18 2	140 3	
	12	4	2 2	375		12	20 8	19	128	
	12	5 1	3 3	357 5		12	21 5	19 7	119 2	
	12	6	4 2	346		12	22 7	20 9	102 9	
	12	6 8	5	332 9		12	23 5	21 7	92 2	
	12	7 7	5 9	320 2		(c)	12	27 5	0	404 7
	12	8 3	6 5	309 8			12	30 2	2 7	394
	12	9	7 2	299 6			12	32 2	4 7	388
	12	9 9	8 1	289 3			12	33 8	6 3	384 2
	12	10 5	8 7	279 5			12	35 3	7 8	380 8
	12	11 5	9 7	266 6			12	41	13 5	370 7
	12	11 9	10 1	259 5			12	47	19 5	359 4
	12	12 7	10 9	248			12	54 8	27 3	343 8
	12	13 5	11 7	236 9			12	2	34 5	333 6
	12	14 2	12 4	226 6			12	6 5	39	326 7
	12	15	13 2	214 7			12	27 2	59 7	396 4
	12	15 6	13 8	204 4			12	43 4	75 9	279
	12	16	14 2	199 3			12	16	108 5	255
	12	16 5	14 7	189 9						

In our arrangement the different constants of the equation or the saturation current had the following values —

$$w = 50 \text{ cm}^3, It = 1050 \text{ cm}^3, I_s = 330 \text{ cm}^3, I_s = 1214 \text{ cm}^3,$$

$$a = 0.118, V = 0.1806 \text{ volts}$$

From these values we get for the saturation current 821 Mache-units

(b) *Second observation* —Made in Bombay on the 20th December 1910

On the 12th December 1910, 1^h P.M., 153 cm³ of water were collected at Tuwa from the same spring in a bottle, the volume of which is 732 cm³. The bottle was closed hermetically and kept till 20th December 1910. Then the water was examined. When collected the water had a temperature of 67°C , and when examined of 22°C . The observations are given in Table II.

TABLE II

	St	T	I	V		St	T	I	V	
(a)	8	5	0	430 5		9	45 9	15 6	240	
	9	17	7 2	400 2		9	36 8	16 5	230 1	
(b)	9	20 3	0	394		9	37 7	17 4	220 4	
	9	22 1	1 8	378 9		9	38 6	18 3	210 4	
	9	24 1	3 8	362 2		9	39 6	19 3	200 3	
	9	25 1	4 8	351 2		9	40 5	20 2	190	
	9	27 7	7 4	325 1		(c)	9	47 4	0	416 8
	9	28 8	8 5	314 1			9	48 4	1	414 3
	9	29 7	9 4	304 2			9	50 7	3 3	409 5
	9	31 2	10 9	289 6			9	53 5	6 1	404 7
	9	32 3	12	279 7			9	57 7	10 3	398
	9	33 1	12 9	269 7		10	5	17 6	388	
	9	33 9	13 6	259 8		10	14 5	27 1	378	
	9	34 9	14 6	250		11	30	102 6	316 5	

* *Memoirs of the Geol. Survey of India*, Vol XIX, pt 2, p 36

In the arrangement for this observation we had—

$$\begin{aligned} w &= 153 \text{ cm}^3, l_1 = 579 \text{ cm}^3, l_2 = 330 \text{ cm}^3, \\ l_3 &= 1214 \text{ cm}^3, \\ a &= 0.256, V = 0.1116 \end{aligned}$$

From these values we get for the saturation current 24.78 Mache-units

(c) *Third Observation*—Made in Bombay, 16th February 1911

On the 13th December 1910 water was collected from the same spring and kept in a closed bottle. On the 2nd February 1911, 600 cm³ of the water were boiled. After boiling the volume of the remaining water was 322 cm³. The radio-activity had completely disappeared. Then (2nd February 2^h-30 P.M.) the bottle was hermetically closed. On the 16th February 1911 the water was again examined.

Here we had—

$$\begin{aligned} w &= 322 \text{ cm}^3, l_1 = 1100 - 322 = 778 \text{ cm}^3, l_2 = \\ 277 \text{ cm}^3, l_3 &= 1214 \text{ cm}^3, a = 0.24 \text{ (the temperature of the water when examined was } 25^\circ\text{C),} \\ V &= 0.0137 \text{ (average loss of potential per second during the first } 15') \end{aligned}$$

From these values we find for the saturation current 1.59 Mache-units

2 OBSERVATIONS OF THE COLD SPRING

(a) *First Observation*—Made at Tuwa on the 13th December 1910

The temperature of the spring is 28°C. The observation of the water began 45 minutes after the water had been collected. Temperature of the air in the shade 30°C. 98 cm³ of water were collected in a bottle whose volume is 1,100 cm³. The results of the observations are given in Table IV.

TABLE IV

St	T	I	V	St	T	I	V
H	M			H	M		
(a)	2 23	0	420.8	2 41	7 5	300.7	
	2 31.5	8.5	415.4	2 41.8	8.3	296.2	
(b)	2 33.5	0	410	2 42.8	9.3	269.9	
	2 34.1	0.6	399.5	2 43.8	10.3	255	
	2 34.7	1.2	392.4	2 45	11.5	237	
	2 35.5	2	381.6	2 46.1	12.6	219.3	
	2 36.5	3	369	2 47.5	14	199.2	
	2 37.1	3.6	358.5	2 48.4	14.9	184	
	2 38	4.5	344	(c) 2 51.6	0	422.5	
	2 39	5.5	330.3	2 54.4	2.8	409.5	
	2 40	6.5	316.4	2 59.5	7.9	395.7	

$$w = 98 \text{ cm}^3, l_1 = 1002 \text{ cm}^3, l_2 = 330 \text{ cm}^3, l_3 = 1214 \text{ cm}^3, a = 0.22, V = 0.118$$

Hence we get for the saturation current 84.25 Mache-units

(b) *Second Observation*—Made in Bombay on the 29th January 1911

On the 8th January 1911, Mr. N. A. Masani, M.A., Professor of Chemistry at Baroda College, collected 600 cm³ of water of the same cold spring and sent it to us. On the 15th January 1911, 10^h 30^m the water was boiled. After

the boiling the activity of the water had ceased completely. The water was then put in a bottle (vol 1,100 cm³), and the bottle hermetically closed. On the 29th January 1911, 10^h 23^m A.M., the water was examined again. The temperature of the water when examined was 21°C the volume only 351 cm³. The results of the observation are given in Table V.

TABLE V

St	T	I	V	St	T	I	V
H	M			H	M		
(a)	9 27	0	408.9	10 53.4	30.3	372.0	
	10 14	47	404.8	(c) 10 56.2	0	369	
(b)	10 23.1	0	402.4	10 58.2	2	367.8	
	10 28.2	5.1	397.2	11 0.8	4.6	367.2	
	10 31.2	8.1	393.9	11 3.8	7.0	366.4	
	10 36.1	13	389.8	11 8	11.8	365.5	
	10 39.5	16.4	386.3	11 12	15.8	365.0	
	10 43.2	20.1	382.3	11 15.2	19	364.4	
	10 47.7	24.6	378.7	11 21.2	25	363.2	
	10 52	28.9	373.2	11 26	29.8	362.5	

$$w = 351 \text{ cm}^3, l_1 = 749 \text{ cm}^3, l_2 = 277 \text{ cm}^3, l_3 = 1214 \text{ cm}^3, a = 0.268, V = 0.012$$

Hence the saturation current amounts to 1.29 Mache-units

II THE THERMAL SPRINGS AT LASUNDRA Lat 22°55', Long 73°11'

A—General Remarks

These springs are about 18 miles to the west-north-west of Tuwa in the neighbourhood of a temple. They can be reached in 2 hours by tonga from the Railway station at Dakor on the line from Cambay to Godhra. At different places water and gas issue. We examined only one of the springs. The temperature of the water was 49°C. The spring yields only a little water which is collected in a small (about 1m²), deep tank for bathing purposes. The other springs are very insignificant.

B—The Radio-activity of the water

(a) *First Observation*—Made at Lasundra on the 27th October 1910

The electroscope was placed in the shade of a tree, about 50 metres from the spring. 440 cm³ of water were collected in a bottle (vol 1,100 cm³). The water was examined 2 minutes after it had been collected. The readings of the apparatus are given in Table VI.

TABLE VI

St	T	I	V	St	T	I	V
H	M			H	M		
(a)	11 20	0	425.5	12 6.7	28	287	
	11 36.5	16.5	418.1	12 10.7	32	270	
(b)	11 38.7	0	414.1	(c) 12 14.5	2	403.5	
	11 40	1.3	411.2	12 16.5	5	398.5	
	11 41.2	2.5	405.3	12 19.5	8.1	395.2	
	11 43	4.3	395.6	12 22.6	15.7	387.5	
	11 45.7	7	383.4	12 30.2	21.1	383.7	
	11 49	10.3	369	12 35.6	25.5	381.4	
	11 55	16.3	337	12 40	35.5	372.6	
	12 0.5	21.8	317.3	12 50			
	12 3.5	21.8	302.5				

The values of the different constants were as follows —

$$w = 440 \text{ cm}^3, l_1 = 660 \text{ cm}^3, l_2 = 330 \text{ cm}^3, l_s = 1214 \text{ cm}^3, a = 0.137, V = 0.045 \text{ volt}$$

Hence we find for the saturation current 3.69 Mache-units

(b) *Second Observation* — Made in Bombay on the 7th November 1910

On the 27th October 1910, 12^h 20^m, 645 cm³ of water had been collected at Lasundia from the same spring. The bottle (1100 cm³) was hermetically closed. On the 7th November 1910 the water was examined. The temperature of the water when examined was 25°C.

The constants had the following values —

$$w = 645 \text{ cm}^3, l_1 = 455 \text{ cm}^3, l_2 = 330 \text{ cm}^3, \\ l_s = 1214 \text{ cm}^3, \\ a = 0.24, V = 0.0153$$

From these values we get for the saturation current 0.85 Mache-units

(c) *Third Observation* — Made in Bombay on the 30th November 1910

On the 27th October 1910, 12^h 20^m 645 cm³ of water were collected from the same spring at Lasundia. On the 13th November 1910, 11^h AM, the water was boiled. Immediately after the boiling no activity was to be found in the water. The bottle was then hermetically closed. On the 30th November 1910 the water was examined again.

These figures show that there is a slight activity.

III COMMON WELL AT ANAND

Lat 22°33', Long 73°0'

Anand is situated at the junction of the B-B & C I Railway line with the line from Cambay to Godhra. On the 14th December 1910, 430 cm³ of water were taken from a well about 15 m deep, in the compound of the R C Mission at Anand and examined immediately afterwards. The well is said to contain a spring. The level of the water in the well is independent of the rains. The temperature of the water is 23.5°C. Table IX gives the results of the observations.

TABLE IX

St	T	I	V	St	T	I	V	St	T	I	V			
H	M			H	M			H	M					
(a)	11	8.0	0	413.0	(b)	11	33.2	8.2	389.4	(c)	11	51.2	3.2	351.6
11	22	13.5	411.8	11	37.3	12.3	379	11	56.7	8.7	348.5			
(b)	11	25	0	408.8	11	40.3	15.3	371.0	12	0	12	347.0		
11	26.2	1.2	406.3	11	42.0	17.5	366.7	11	7	10	345			
11	28.2	3.2	401.3	11	41.5	19.0	362	11	12.5	21.0	344			
11	30.5	5.2	395.8	(c)	11	48	0	357	11	23	55	340.7		

The values of the constants were as follows —
 $w = 430 \text{ cm}^3, l_1 = 670 \text{ cm}^3, l_2 = 330 \text{ cm}^3, l_s = 1214 \text{ cm}^3, a = 0.25, V = 0.031$

Hence the saturation current is 2.78 Mache-units

Two days later when the well had not been much used, so that there was a considerable amount of water in it, the activity of the water was found to have diminished considerably, but the water was still active. Before the first examination much water had been taken from the well to irrigate two gardens, so that the quantity of water in the well was not very great.

On the 19th December 1910, 683 cm³ of water from the same well was evaporated and the residues in the vessel examined. The existence of radiation in the residues was doubtful.

Note — The water of a common well at Kaimasad, about 4 miles west of Anand, on the line from Anand to Cambay, and that of an ordinary well at Vadtal, about 3 miles west of the Baravi Station on the B-B & C I Railway line were also examined but no radio-activity was found. These two wells have no springs.

IV THI HOT SPRINGS NEAR VAJRABAI

Lat 19°29' 30'' Long 73°6' *

A — General Remarks

The Thana District is rich in hot springs. We visited only the springs in the neighbourhood of Vajrabai, twelve miles north of Bhiwandi. From Kalyan the place can be reached by tonga in four or five hours. There are four distinct sets of hot springs near and along the Tansa river. They form groups along a line of four miles' length. All the springs yield much water and gas. The gas is of an unpleasant smell, resembling that of rotten substances.

1 *Akkoli* — There are five cisterns in front of the temple of Rameshvar near Akkoli. Only four of these cisterns have springs. The temperatures of the springs that we measured are 51°C, 50.6°C, 50.5°C, 49.9°C, and 49.8°C. The temperatures were taken when the cisterns were empty so that we could easily get at the places where the water comes out. As a rule the cisterns are full of water and there are almost always bathing people there since the springs are held sacred. These springs yield less water and gas than the other springs in the same district.

2 *Vajrabai* — About a mile farther down the river there are five cisterns, two on the bank and three in the bed of the river. These springs yield much water and gas. We collected in one spring 1,100 cm³ of gas in the short time of six minutes, though we were able to collect only about one-third of the gas. The temperatures of the different springs are 50°C, 49.8°C,

49.8°C, 48.8°C, and 49.9°C. Also these springs are held sacred. It will interest botanists to learn that there are plenty of algae in the hot water.

3 *Ganeshpuri*—There are two cisterns with hot water in front of the temple of Bhimeshvar near the village of Ganeshpuri. About a mile farther on there are three hot springs well hidden in the bed of the Tansa river. They are the finest set of the whole group. Their temperature is 58.5°C (137°F). The water is very clear and pure and comes directly out of the rock. The springs yield large quantities of gas and water. Though we could secure only from one-fourth to one-third of the total amount of gas yet we succeeded in collecting 1,081 cm³ of gas in 11 minutes. Also in this hot water green algae are growing on the stones. During the monsoon the springs are under water.

B—The Radio-activity of the Springs.

1 *Aklohi*—We visited these springs on the 19th and 20th October 1910 and made some preliminary observations. Again we went there on the 22nd December 1910, but then it was impossible to measure the activity of the water on account of the numerous people bathing in the cisterns. So we must abstain from making definite statements about the radio-activity of the water.

2 *Vajrabai*—On the 19th October 1910 and the following days we made some preliminary measurements of the gas and the water of one of the five springs mentioned under A near Vajrabai. A second visit to these springs was made on the 22nd December 1910, and the radio-activity of the gas and the water of one of the springs was measured.

(a) The radio-activity of the water

(aa) *First observation*—Made near the spring (about 50m from the spring) on the 22nd December 1910.

The results are given in Table X

TABLE X

St	T	I	V	St	T	I	V
H	M			H	M		
(a)	9 49	0		(b)	10 21 4	13 3	406 6
10	5 2	16 2		10	23 9	15 8	406 6
(b)	10 8 1	0		10	27	18 9	406
10	8 9	0 8		10	30 8	22 7	405 4
10	9 8	1 7		10	33 4	0	403 4
10	11 3	3 2		10	37 5	4 1	402 5
10	13 8	5 7		10	44 5	11 1	401
10	17	8 9		10	55	21 6	400
10	18 9	10 8					
		406 6					

The observation began 16 minutes after the water had been collected. Many people had already taken their baths in the cistern before we

arrived. The values of the constants were as follows—

$$w=560 \text{ cm}^3, l_1=540 \text{ cm}^2, l_2=330 \text{ cm}^3, l_3=1214 \text{ cm}^3$$

$$a=0.138, V=0.0019$$

Hence we get for the saturation current 0.119 Mache-units

(bb) *Second observation*—Made in Bombay on the 27th February 1911

On the 22nd December 1911, 12h 52m P.M., 449 cm³ water had been collected and kept in a closed bottle of volume 644 cm³. On the 27th February 1911 the water was again examined, and was found to be radio-active. The loss of potential due to the emanation alone was 3.8 volts in 56 minutes.

(b) The radio-activity of the gas

The gas was examined in the same way as the emanation in the water. 1,100 cm³ of gas were collected and examined.

From these figures we see that a loss of 23.5 volts in 23 minutes is due to emanation alone.

$$\text{Here } l_1=1100 \text{ cm}^3, l_2=277 \text{ cm}^2, l_3=1214 \text{ cm}^3, V=0.017$$

Hence we find for the saturation current 0.5 Mache-units

3 *Ganeshpuri*—The springs near the temple were not examined, but only one of the three springs in the bed of the river.

(a) The radio-activity of the water

(aa) *First observation*—Made at Vajrabai, 23rd December 1910

422 cm³ of water was collected in a bottle of 738 cm³ volume and examined 3 hours later. The results of the observation are given in Table XII

TABLE XII

St	T	I	V	St	T	I	V
H	M			H	M		
(a)	4 24	0		371.5		4 56	14
4	39	15		370.6		2 24	365.3
(b)	4 42	0		367.9		5 8	26
4	43.7	1.7		367.1		5 11	363.5
4	47.1	5.4		367		5 20	362.9
4	52	10		366.4		5 30.8	19.8

Here we had—

$$w=422, l_1=361 \text{ cm}^3, l_2=330 \text{ cm}^3, l_3=1214 \text{ cm}^3$$

$$a=0.22, V=0.00166$$

Hence we get for the saturation current 0.14 Mache-units

(bb) *Second observation*—Made in Bombay, 19th February 1911

On the 23rd December 1910, 420 cm³ of water was collected and kept in a closed bottle. The water was examined on the 19th February

It showed some activity. The loss of potential due to emanation alone was 31 volts in one hour.

(b) The radio-activity of the gas

Observations made at Ganeshpuri on the 23rd December 1910

1,081 cm³ of gas were collected and examined

From these figures we find that the loss of potential after 15 minutes due to emanation alone is 16.9 volts

Here $I_1 = 1100 \text{ cm}^2$, $I_2 = 277 \text{ cm}^3$, $I_3 = 1214 \text{ cm}^5$, $V = 0.018 \text{ volts}$

Hence we find for the saturation current 0.63 Mache-units

Note—We need hardly mention that the observations given here are only some few specimens of a large set of observations.

Conclusion—From our experiments it is certain that all the hot springs which we examined contain radium emanation and salts of radium. The radio-activity of the hot springs in the Thana district is not very great, but the springs are radio-active, and contain salts of radium in solution. *The radio-activity of the thermal waters at Lasundur is much greater than that of the springs at Tuwa quite extraordinary. As far as we could ascertain from scientific periodicals* there are only four out of the large number of thermal springs in Austria which show a greater radio-activity than the springs at Tuwa, viz., at Gastein three springs out of 18 and at Joachimsthal (in Bohemia) one out of three.* We hope to examine in the course of time the radio-activity of all the hot springs in the Bombay Presidency. It will be the task of medical men to study the sanitary efficacy of the same springs.

A PRELIMINARY NOTE ON BLOOD PRESSURE

By J. G. P. MURRAY, M.D., F.R.C.S. (Edin.),

MAJOR, I.M.S.,

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In the *Indian Medical Gazette* for May, 1911, I noticed in the correspondence column some questions by Major Elliot asking for information with regard to the average blood pressure among Indians, and whether it is the same as it is in Europeans. As this is a question which has lately come very much more into prominence in connection with Major Rogers' valuable work in the treatment of cholera, it seemed to me it would be of interest to study it among the population met with in an ordinary district jail.

The instrument used in estimating the blood pressure was one of the modifications of the Riva-Rocci Mercury Sphygmomanometer, namely, French's made by Down Bros. It is a most useful modification, because by a simple arrangement

the mercury is prevented from being upset and the instrument is therefore always ready for use and can be carried anywhere without risk.

The average blood pressure among healthy European males is said to vary between 125 and 135 mm. Among Indians it is stated by Major Rogers in his book on *Cholera and its Treatment* that "the normal blood pressure is only from 100 to 120 mm," but what the average is among healthy adult males I have never seen stated.

Prisoners in jail are classified, according to their health as good, bad or indifferent, and this classification has been followed in the following observations.

In my first series the blood pressure was estimated in 100 good health prisoners, the great majority of them being adult males between the ages of 20 and 40 years.

In all cases the observation was made with the individual in the recumbent position, free from all strain, and on the right arm. Of the hundred prisoners in good health the average blood pressure worked out at 117.9 mm. The highest blood pressure in this series was 144 mm in a man aged 35 apparently in good health free from any arterial or renal disease, height 5 ft 3 ins, weight 117 lbs, the lowest was 99 mm in a man aged 35, height 5 ft 3 ins, weight 101 lbs. This was the only case among the good health men in which the pressure was below 100 mm. The highest pressure actually found was 145 mm in a man aged 40, height 5 ft 3½ ins, weight 115 lbs, who had been admitted in good health. Examining him again about two months later the blood pressure was found to be 154 mm. A more thorough examination was now made, and it was discovered that there was distinct thickening of the arteries and though there was nothing abnormal detected in the heart, there was a distinct trace of albumen in the urine, specific gravity of which was only 1005. Evidently this man should not be classed among those in good health.

My second series numbered 85 prisoners in indifferent and bad health, the age limit in this case reaching far above 40 years up to 60 years and perhaps in one or two instances nearly 70 years. Here we find the interesting fact that the average blood pressure in these men works out to be 121.7 mm nearly 4 mm higher than that of the men in good health.

This is easily explained by looking through the list and noticing the number of instances when the blood pressure is higher than normal, and when on further examination some pathological factor has been found to account for it, such as thickened atheromatous arteries, chronic renal mischief, and so on, especially the first mentioned condition. Curiously enough also I notice on looking through the results that it is the men entered as in bad health who are found in so

* *Phys. Zeitschr.*, Vol VI, p. 692

many cases to have an abnormally high blood pressure, thus among seventeen men examined on one occasion there were seven in bad health with blood pressures as follows 163, 168, 103 161, 118, 113, 155

The most interesting case in this series was that of a man aged 60 who on examination was found to have a blood pressure of 204 mm the highest noted. On questioning him as to the state of his health, he complained greatly of headaches, giddiness, and palpitation, and on further examination he was found to have very marked atheromatous changes in his arteries, a hypertrophied heart with loudly accentuated second sound at the aortic area, and his urine contained a faint but distinct trace of albumen which is always present. He has been under treatment since admission, a period of 2 months, with some improvement in his general health and with some alteration in his blood pressure, the lowest obtained being 171 mm. Evidently this man is living on the brink of a precipice.

The lowest blood pressure in the second series was found in a man, aged 48 in indifferent health. It was only 90 mm.

In the whole series of 85 men, there were only four with a blood pressure below 100 mm.

At the same time that the blood pressure was recorded a careful note was also kept of the height and weight of the men at the time of the observation and on calculating the average of these they work out as follows —

Average weight of 100 good health prisoners	114 lbs
Average height of ditto	5 ft 3½ in
Average weight of 8, indifferent and bad health prisoners	103 lbs
Average height of ditto	5 ft 4 in

It will be extremely interesting to see if these figures which I have given, correspond in any way with those which have been or which will be perhaps worked out by others in other parts of India.

My thanks are due to Sub-Assistant-Surgeon Lalit Mohan Adhikary for the very valuable assistance which he gave me in making these observations.

ipecacuanha treatment in spite of hectic fever, rigors, and profuse sweats, indicating the formation of pus.

H G, Eurasian, male, age 45, admitted into hospital on the morning of June 16th, 1911.

Complains of not having felt well for about a week previously. On the 11th instant (5 days previous to admission) he first sought medical advice, complaining at the time of a feeling of uneasiness and weight on the right side and upper part of abdomen. From this day until admission into hospital he was treated in his own house, a record of his temperature being kept. He was ordered conjees, given magnesium sulphate and an effervescent mixture internally whilst antiphlogistine was applied over the hepatic region. In spite of this treatment the patient's condition did not improve with the exception of some decrease of pain, and he was therefore sent to hospital on June 16th.

State on Admission — Patient complains of pain and uneasiness in right hypochondrial and epigastric regions and states that he has also suffered from pain in the right shoulder. Says he cannot sleep at night. He is unable to lie on his left side as if he does so the pain in his right side becomes worse. Has had severe sweats at night and early morning. For the last few days he has had a shivering fit and fever daily. No cough. No history of alcoholism or dysentery obtainable. Bowels well opened as the result of a purgative. Face somewhat drawn. Tongue covered with thick yellowish fur. Palpation of abdomen reveals some tenderness in right hypochondrial and epigastric regions, but tenderness is not excessive. Lower margin of liver can just be felt below costal margin. Spleen not palpable. Slight enlargement of liver ascertainable by percussion. Liver dulness commences above at the 6th rib in front, and at 7th rib in mid axillary line.

Examination of chest reveals nothing abnormal anteriorly, but posteriorly resonance is diminished over base of right lung whilst the respiratory murmur is markedly diminished from the inferior angle of right scapula downwards. No pleural friction or other adventitious sounds heard. No displacement of apex beat of heart. Mensuration in hepatic region shows circumference on right side to be 1 inch larger than that of left side. Urine *s.g.* 10—20 and no albumen, no sugar, no bile. Motions — No amoebae and no ova found.

Blood Examination — Absolute leucocyte count not made, but smear shows very decided leucocytosis.

Differential leucocyte count —

Polymorphonuclear
Large mononuclear
Small mononuclear
Eosinophiles

A Mirror of Hospital Practice

A CASE OF ACUTE HEPATITIS WITH INDICATIONS OF PUS FORMATION, SUBSIDING UNDER IPECACU ANHA TREATMENT

By F. F. ELWES, M.D. (LOND.),
MAJOR, I.M.S.,

Surgeon to H.E. The Governor of Madras

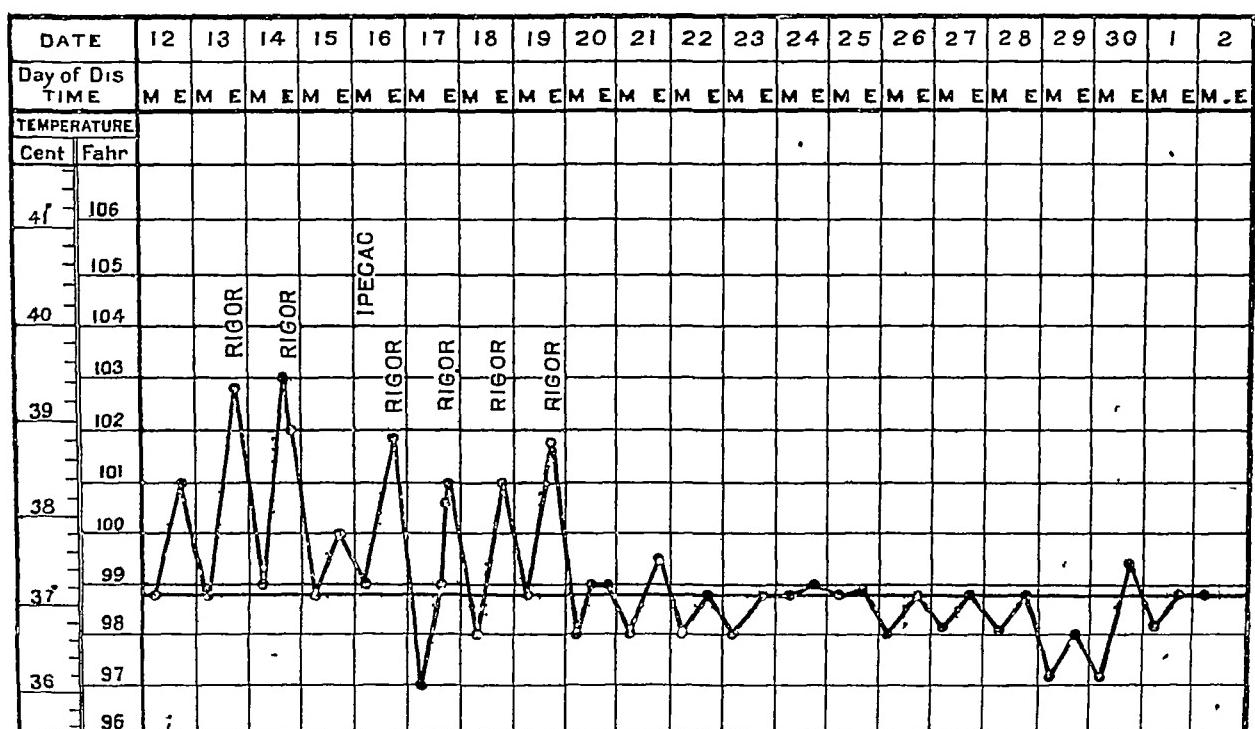
This following case of acute hepatitis is of interest inasmuch as it entirely subsided under

Treatment—Bed Liquid diet Ipecacuanha, gis xx daily given as pills coated with salol

Progress—For three days after the commencement of the Ipecac treatment, patient had a distinct rigor daily and rise of temperature to 101° or above, but after this the temperature scarcely rose above normal He also had occasional profuse perspirations at night necessitating complete change of clothes The pain and tenderness in right hypochondriac region rapidly subsided, but the pressure symptoms on base of right lung took a considerable time to disappear, the decreased infra scapula resonance and diminution of respiratory murmur being marked for a long time, indeed when the patient left hospital on July 2nd the respiratory murmur was still not so distinct over the base of the right lung as on the opposite side The patient

trying to remove a leech from the pharynx of an Afghan lad of fourteen I told him to carry on while I attended to some other work and presently he reported that the leech had gone down into the boy's larynx With direct sunlight and a laryngoscopic mirror I could see the leech very clearly lying on the ventricular band on the right side From time to time the patient was seized with paroxysms of coughing and dyspnœa

I was much puzzled as to the proper treatment of this case I had no laryngeal forceps, the only instrument with which I could possibly reach and remove the leech being a pair of curved phimosis forceps I was afraid that an attempt with this instrument would not only fail but might cause the leech to slip into the trachea I ordered tracheotomy instruments to be sterilised and then



has now been out of hospital for over three months, during which time I have occasionally seen him All abnormal physical signs have disappeared, he has kept in good health and had no return of hepatitis

SOME CASES OF LEECH IN THE AIR PASSAGES

BY W E SCOTT-MONCRIEFF,
MAJOR, I M S,
Panchmar

ONE day last year on arriving at the Panchmar dispensary I found the Sub-Assistant Surgeon

the patient and his elder brother said they wished to go if I could not remove the leech Fearing that an unsuccessful attempt with the phimosis forceps would frighten them away across the border the patient with the leech perhaps in his trachea I decided on radical measures Under chloroform I opened the trachea and prolonged the wound upwards till I had divided the cricoid and the lower part of the thyroid cartilage Now the leech could be seen projecting from time to time beyond the right vocal cord I had no difficulty in removing it with a pair of sharp-pointed forceps The wound was carefully sutured and the patient was soon discharged none the worse of his adventure,

A few days ago I found two patients at the dispensary, one a child of three with a leech in the nose, the other a lad of about fourteen with, the Sub-Assistant Surgeon said, a leech in his larynx.

For the first case I ordered some tobacco infusion to be made having recently been told by a Civilian that in the Andamans this treatment is employed with invariable success. In the meantime I tried unsuccessfully to see and remove the leech under chloroform. As the child was coming round the leech appeared at the anterior nares and was easily removed.

In the second case with the laryngoscope I could see the leech clearly attached to the posterior surface of the epiglottis. Fortunately the lad's throat was not irritable and he showed it very well. This time the phimosis forceps proved useful, and I removed the leech at the first attempt.

In this part of the country leeches are not common, I have had great difficulty in getting some for therapeutic use. I would be glad to know what treatment is followed in countries where a leech in the nose or throat may be a more common occurrence than it is in North-West India.

THE TREATMENT OF ORIENTAL SORE

By G. G. JOLLY,

CAPTAIN, I.M.S.,

Quetta

DURING the past eighteen months I have had a considerable number of cases of Oriental Sore under my treatment, and my experience may not be entirely without interest, more especially as most of the text-book descriptions of the treatment of this troublesome condition are scanty and unsatisfactory.

Treatment of skin disease may be either general or local. Manson, speaking of Oriental Sore, states that analogy would lead us to think that healing could only occur as the result of a specific treatment, or on the establishment of immunity. This is not, however, in accordance with experience. It would appear from the results of treatment, that the infection should be regarded as a purely local one as opposed to that of Kala-Azar, in spite of the morphological identity of the two parasites. It is surely no more remarkable that Oriental Sore should be a purely local condition, whilst Kala-Azar is a general infection, than that lupus vulgaris should be local and acute miliary tuberculosis general.

Local treatment is the only satisfactory line to proceed upon, but here one is faced with a

multitude of methods and drugs, sufficiently numerous to demonstrate the unsettled state of our knowledge as to the best treatment.

In considering what method to adopt in any particular case, the number of sores, their position and the stage of the disease should be taken into consideration. Obviously the treatment of an early case of seven or eight small boil-like sores must be radically different from that of a single chronic ulcer, measuring possibly four square inches in area in which natural healing has commenced.

Excision.—This is only applicable to early cases when the sores are few in number, and not situated on the face. In two or three cases in which I have excised such sores and sutured the skin, primary union has occurred.

Scraping.—This is, taken all round, the method of most general application. It is indicated when the sores are not situated on the face, and when ulceration is not very extensive. The scraping should be done thoroughly, special attention be paid to the edges, which should be rendered flush with the surrounding skin. The sores may then be swabbed with pure carbolic acid, and dressed with any moist antiseptic dressing. In the after-treatment, mercury ointments, especially unguentum hydriargyri ammoniat, appear to hasten healing and prevent relapse.

Local Applications.—Of these the number is legion. Caustics such as silver nitrate, copper sulphate, arsenious acid, nitric acid, ichthyol, balsam of Peru, and a native preparation called "rasout" have all been tried by me with varying success, mainly dependant on the stage of the disease. When it is important to avoid scarring, it is sometimes of use to give one or other of these drugs a trial, and I have found the mercury ointments, and especially ammoniated mercury ointment the most satisfactory. Occasionally a superficial sore will heal up rapidly under this latter ointment with very little scarring. If inflamed the ulcer should, of course, be poulticed until the inflammation has subsided. In the early stage of the sore, before ulceration has advanced far, thorough swabbing with pure carbolic acid, followed by the application of iodoform powder occasionally induces rapid cure. In the majority of cases it is a mistake to spend much time on this line of treatment, but when a sore is too extensive to be scraped without great loss of tissue, and perhaps the necessity of subsequent skin-grafting, one is justified in giving local application of one or the other of these drugs a fair trial.

X-Rays.—The X-Ray is a useful adjunct in the treatment of Oriental Sore. As a method of treatment by itself it is, however, rather disappointing. A sore exposed to X-Rays as a rule

shows marked improvement after the first few applications. It becomes cleaner, inflammation subsides and with it pain, and the skin edges begin to grow in. This improvement unfortunately does not as a rule continue beyond a certain point, and in the majority of cases some other method has to be resorted to, to complete the cure. Frequently after-treatment with X-Rays the sore heals in parts, while pockets are left containing pus. These should be slit up if necessary, and swabbed with pure carbolic acid. The best results are obtained from X-Rays with superficial sores, and then healing is frequently rapid after a few exposures. In a large deeply-ulcerated sore, when the tissues are soft and friable, and scraping would mean the complete removal of all epithelium over a large area, X-Rays will often induce healing in patches, which gradually unite, leaving only two or three deeper places to be dealt with by other methods. Another indication for X-Rays in this disease is in the case of sores on the face, when the patient usually comes for treatment early, and where it is important to avoid scarring. Otherwise when scraping can be done it is the more rapid and sure method.

Carbon Dioxide Snow.—This is a recent method which is still in the experimental stage. An interesting note upon it was given by Captain H. H. Broome, I.M.S., in the *I.M.G.* of April, 1911. I have tried the method in some ten or twelve cases in various stages, and have not found it to be superior to scraping. In these cases after application of the snow for from thirty seconds to one minute, the superficial portion of the sore gradually separated leaving a fairly clean, deeply hollowed out ulcer, which took quite as long to heal as the ulcer left after scraping. The method has of course this advantage that no anaesthetic is required.

Prophylaxis.—Until the methods or method of infection are more thoroughly investigated prophylaxis must of necessity be somewhat experimental. The disease has been proved to be inoculable and auto-inoculable, the discharge has been shown to be infective, and as pointed out by row, it is probable that infection is commonly carried by house flies on their feet and proboscis, and possibly also in their excreta. The alighting of an infected fly upon a small abrasion thus constitutes an exposure to infection. This being so, preventive measures should include personal cleanliness to prevent auto-inoculation, treatment and careful covering of all wounds and skin abrasions and of the sores themselves, and lastly, exclusion and destruction of flies and their breeding places. In view of the possibility of an alternative method of infection through the bites of biting insects, I recommend the substitution of iron bedsteads for wooden charpoys, the use of

mosquito curtains, and the cauterising of all insect bites with lunar caustic or some similar preparation, as measures which it may be worth while to adopt in endemic areas.

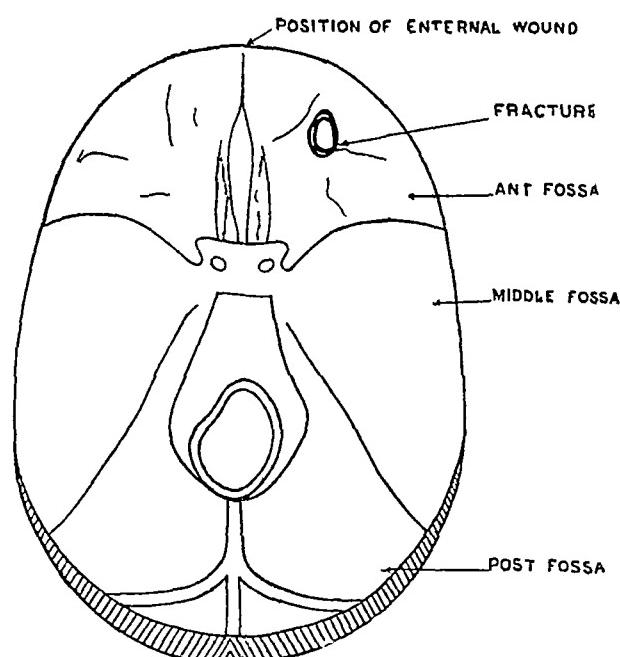
AN UNCOMMON FRACTURE OF THE SKULL

BY T. H. KEATES, M.R.C.P. (London),

CAPTAIN, I.M.S.

THE following notes of a medico-legal case may be of interest owing to the unusual position of the fracture of the skull.

The deceased, a man of about thirty-five years of age, was on September 4th, at 8 P.M., hit on the forehead, over the inner angle of the right orbit with a "sanghan" (wooden pitch-fork), which was held by the handle, one of the iron bolts which fasten the two prongs together coming in contact with his forehead and making a three-cornered punctured wound. He is said to have immediately fallen senseless to the ground. He was removed to hospital next morning, when he was found to be completely comatose, with a temperature of 106°. He died at 10 A.M. on the 5th with respiratory failure, the heart beating strongly till the end. Artificial respiration was kept up for one hour, but it was of no avail. *Post-mortem* a contused three-cornered wound $\frac{3}{4}$ in. in diameter was found over the



internal angular process of the frontal bone on the right side, just above the root of the nose. The wound went down to the bone. There was great ecchymosis of the right upper eyelid, and

sub-conjunctival haemorrhage of the right eye. The right pupil was dilated and the left somewhat constricted. There was some blood issuing from the left ear, a point which had been remarked on before death.

On reflecting the scalp, the outer surface of the skull was seen to be intact, there was no fracture at the site of the injury, and the right orbital crest was intact. On removing the skull cap, the right lobe of the cerebrum showed a good deal of subarachnoid ecchymosis over the whole of its outer surface. When the brain was removed, a subdural haemorrhage was seen occupying the right anterior fossa. About $2\frac{1}{2}$ oz of blood-clot was present, this had somewhat hollowed out the under surface of the right frontal lobe, and had extended from there into the right sylvian fissure, which was entirely filled up with blood-clot, that had completely surrounded and pressed on the Island of Reil. The bleeding was seen to have come from a fracture in the centre of the orbital plate of the frontal bone. This fracture was something like a bullet-hole, oval in form and about one inch in its greatest diameter. The bone occupying this area had been split into fragments, which had forced through, and torn the dura mater in this position. Thus a hole had been formed leading straight through into the orbital cavity, which was filled with blood-clot. The haemorrhage had probably come from the anterior meningeal artery. This was the only fracture present. There was no fracture in the middle fossa on the left side, and so the bleeding from the left ear had probably only been due to an injury of the external meatus.

It seems very curious that the delicate cribiform plate of the ethmoid lacrimal bone were uninjured, for they were much nearer to the original point of contact. The actual fracture was nearly two inches distant from the point, at which the force was applied. What was the reason of the fracture being formed in this way, and why did one not get the usual linear fracture extending across the anterior fossa from the point originally struck? It appeared as if the weakest and thinnest part of the anterior fossa had just cracked and collapsed, like an egg shell when squeezed.

The symptoms also were somewhat anomalous. The high temperature of course was due to compression. But how was it that the respiration failed so much before the heart, or rather why was it that the respiratory centre alone was affected? There was no injury to the medulla or haemorrhage into the ventricular system of the brain, which might have interfered with the respiratory centre. Could this have been possibly due to the pressure on the Island of Reil? Can anyone inform me as to the functions of

this part of the brain? I cannot find anything definite about it in the literature.

AN UNUSUAL CASE OF WORMS IN THE PERITONEAL CAVITY SIMULATING APPENDICITIS

By R. G. PICKLE,

Sub Asst Surgeon

IYUS ADAM, a Mohamedan, aged about 28 years, was admitted into the hospital on 31st July 1911 for extreme pain and tenderness in the right iliac fossa.

Previous history—Patient says that about 15 days ago he was suddenly seized with pain of a colicky nature in the umbilical region. These pains lasted for a couple of days and then changed their site down to the right iliac fossa.

Condition on admission—Patient looked obviously suffering great pain. Breathing chiefly thoracic. Nearly whole of the right side of the abdomen was tender and painful. Percussion note dull over the iliac fossa. On palpation a sense of much hardness, but no distinct mass felt. The constitutional disturbance was great though the thermometer showed no rise of temperature. Tongue foul looking. Appetite bad. Abdomen tympanitic. Bowels constipated. Heart beats rather feeble. Pulse small and feeble 120 per minute.

Further history—An attack of appendicitis was very strongly suspected and the progress of the symptoms was closely watched. During the period, the constipation was relieved by enema and a dose of Santonin was given to clear the suspicion of worms. But these measures together with the local means employed served in no way to relieve the patient's sufferings. On the contrary, the swelling with its concomitants was steadily increased and the patient became very restless. It was, therefore, decided by Major A. G. Saigent, I.M.S., to operate on him and accordingly on the 7th August 1911, the swelling was incised. On opening the peritoneal cavity nothing abnormal could at first be seen except thickened peritoneum. But on prolonged exploration with the fingers, a small abscess cavity was detected in the neighbourhood of the caecum which contained two round worms and about half an ounce of thick white pus. These parasites were alive when taken out and must have been obviously the cause of the whole mischief. It need hardly be mentioned that all the symptoms gradually cleared up after the operation, the wound healed by first intention and the patient made good recovery.

My thanks are due to Major A. G. Saigent, I.M.S., Civil Surgeon, Ratnagiri, for his kind permission to publish this case.

Indian Medical Gazette.

DECEMBER

HEALTH OF BRITISH TROOPS IN INDIA

SURGEON-GENERAL TREVOR, P.M.O., India, and Colonel R H Firth, R.A.M.C., the Sanitary Officer at Army Headquarters in India, have compiled a most instructive report on the health of British Troops in India in the year 1910, which shows very clearly the very remarkable progress made in the last few years.

The following table is truly as remarkable as it is satisfactory —

	RATIO PER 1,000 OF STRENGTH		
	1904-08	1909	1910
Admissions	839.00	716.93	576.55
Constantly sick	50.68	40.26	31.9
Deaths in the Command	9.72	6.25	4.66
Invoilts sent home	25.30	9.06	7.75
Average sick time to each soldier	18.52	14.69	11.66
Average duration of each case of sickness	22.07	20.49	20.22

We do not assume that this high record can be surpassed or even maintained, good and bad years will occur, but a very high standard has been reached, and we may confidently assert that it will not permanently be departed from.

The following table shows the steady improvement in the incidence as well as in the case mortality of the enteric group of fevers including paratyphoid —

Year	RATIO PER 1,000		Case mortality per cent
	Admissions	Deaths	
1906	15.6	3.19	20.5
1907	13.1	2.77	21.1
1908	14.6	2.74	18.8
1909	8.9	1.55	17.7
1910	4.6	0.63	13.7

As regards the aetiology of typhoid cases it is said that undetected cases play a very large part in dissemination, and this applies also to paratyphoid cases. Col Firth remarks —

"The really remarkable diminution of enteric infection among European Troops in India during 1910 is difficult to explain by any one special condition. The weight of evidence points to the dominant influence of our present day system of segregation of the infected, with the careful examination of all convalescents and

and their retention in the Convalescent Depôts until found to be absolutely free from infection. It is difficult to appraise too highly the great part played by two Enteric Fever Convalescent Depôts at Naini Tal and Wellington in controlling this disease. The work done at these depôts will be the subject of remark in a later section of this report. Their influence for good has been supplemented by the wonderful increase in the numbers of men inoculated against enteric fever. This matter is also dealt with in a later section. Apart from these two factors for good, segregation and inoculation, there can be no doubt as to the development of a much higher standard of attention to sanitary detail in barracks and lines. This has been much facilitated by an increased appreciation on the part of the men as to the value of an attention to the principles of elementary hygiene. In these matters much support and initiative has been forthcoming from regimental and staff officers, coupled with a whole hearted support from Cantonment Magistrates and others having control over areas outside military jurisdiction."

It is satisfactory to note a statistical falling off in venereal disease, the figures, showing a fall of cases from 117 per mille in 1906 to only 58 per mille in 1910, are almost too good to be true, but there can be no doubt of a substantial improvement in this respect.

The following table of the incidence of dysentery and liver abscess is interesting, but no mention is made of the degree to which this is due to Rogers' Ipecacuanha treatment.

Dysentery and Liver Abscess — These affections show a decrease, both as regards admission and death-rate. There were 558 admissions for dysentery with 17 deaths, and 75 admissions with 35 deaths for liver abscess. The comparative incidence of these diseases during recent years is shown in the following table —

YEAR	RATIO PER 1,000			
	DISENTERY		LIVER ABSCESS	
	Admissions	Deaths	Admissions	Deaths
1906			15.2	0.53
1907			11.7	0.33
1908			14.4	0.42
1909			11.2	0.25
1910			7.7	0.23

The report is a record of good work, and in every way creditable to the Royal Army Medical Corps, and we may hope that these good practical results will cause the Military authorities to recognise still more and help still more modern methods of preventive hygiene.

There has been a most gratifying extension of antityphoid inoculation in 1910, and the

Royal Army Medical Corps are entitled to the praise given them for their whole-hearted advocacy of the necessity of, and the value of systematic inoculation against enteric fever, and Col Firth remarks that in whatever way we look at this question the case in favour of inoculation is much stronger than some critics would have us believe. One new point has come to light that as probably a result of inoculations, the age incidence of enteric has been postponed and instead of attacking young men it seems rather to attack men of 24 to 30 months' service in India, which seems to point to the need for a second inoculation after 30 months' service.

We are glad to see the good work done at the Naini Tal and Wellington Enteric Depots recognised, at Naini Tal 239 men were received and 3,219 samples of excreta examined, and six carriers were thus detected. At Wellington Depot 81 men were examined and three chronic carriers detected. The great drawback to the usefulness of these depots is that they do not provide for the segregation of women and children convalescents, and it is to be hoped that this will be arranged for.

Current Topics

HOSPITALS AT HOME FOR OFFICERS

We have been asked to call the attention of officers of the Indian Army to the advantages offered by two hospitals at home for sick and invalid officers of the Army.

There are the Convalescent Home at Osborne and King Edward VII's Hospital for Officers at 9, Grosvenor Gardens, S.W.

As regards Osborne it is well known that this, Queen Victoria's favourite palace, was given to the Nation by King Edward VII, and the gift was settled by an Act of Parliament in 1902, as a Convalescent Home for Officers of the Navy and Army.

There is no need to describe the beautiful surroundings of this well-known palace, the accommodation available is for 43 officers, five of whom may be accompanied with their wives and is equally divided between the Navy and Army.

Medical attendance is free, except in cases requiring special nursing or massage, &c. The entire cost amounts to only half a crown a day for each officer or his wife. The accommodation, writes Colonel H. H. Forman, A.M.S. (R.A.M.C., *Journal*, June 1911), is of the best, "dining-rooms, drawing-rooms, lofty airy bed-rooms, smoking-room, billiards, organ, pianos, &c. Out-of-doors there are golf, tennis, croquet, bowls, a

motor car, and several yacht clubs which make convalescent officers honorary members, medically there are massage, appliances for exercises, electrical treatment of all sorts, saline and other baths, rest cures and the like." All this for half a crown a day.

There is no difficulty and there need be no diffidence in applying for admission on the back of the Army Lists (Home and Indian) will be found details as to the procedure necessary to gain admission.

The other institution for officers is the King Edward VII's Hospital for officers at 9, Grosvenor Gardens, S.W. This hospital was founded in 1904 by Sister Agnes, and is intended for officers of the Army, Navy and Indian Army on the active list. Everything in the hospital is free except the doctor's fees. There is no honorary medical staff, and patients can be treated by any member of the surgical staff of a London hospital. Officers are asked to subscribe the small sum of five shillings or more, and we believe all will agree that such an institution deserves the support of every officer in India, and we commend it to the attention of our readers (see inside advertisement in the quarterly Army List (Indian)).

HEALTH AND EMPIRE *

This is a very interesting volume, written by Dr Freemantle, author of a well-known book on the S African war entitled "A Doctor in Khaki". It is dedicated to the "Statesman-Pioneer," Joseph Chamberlain.

It is a record of 18 months travel to study problems of public health and to fit the author for parliamentary service, "should occasion arise," as we hope it will.

The writer employed himself for six months on plague duty in the Punjab, and as a high official in Simla foretold, he learned "more of Indian problems in those six months than any but a dozen members of the House of Commons."

The book is written for the general reader, and we can only wish that it will be read by that somewhat vague personage.

We may now give our readers a brief summary of the volume. Chapter I deals with the plague in the Punjab and work in the village of Tarn Taran, and gives an interesting account of the work of an inoculation officer, "English he must be for the natives do not trust a native, however well qualified."

He also visited other places in company with a Lt.-Colonel, I.M.S. "whom I assisted to perform his ten thousandth cataract, on a man attracted by his fame from beyond the Himalayas." Dr Freemantle next favourably comments upon the research organisation started by the late Lt.-Col J. T. Leslie, I.M.S., and advocates a "general staff for disease" in the Empire, and

* *Health and Empire, a Traveller's study*, by F. Freemantle, County Medical Officer of Health, London. J. Onslow, Lt

he says what is now wanted in India are "practical measures." We may pass over chapter II and its comments on the remark of a learned Parsi lady—well known in official circles in Bengal—on the "gamble in life." "Half policies are the devil, a vigorous rule is what native races require, and some remains of the gamble in life," says Dr. Freemantle.

The history of the Pasteur Institute and of rabies is dealt with in the next chapter.

Chapter IV deals with the plague-flea and plague work since Haffkine's first researches Beri-beri and the good work done for the Empire in the Laboratory of the Federated Malay States forms the subject of another chapter, the work done by Shiga in Japan is duly appreciated, but we venture to think that there is much inaccuracy in some of the statements about Shiga's serum for dysentery. A very interesting chapter is given to the subject of town planning in Kuala Lumpur, where streets 120 feet broad are to be found, and the pressing subject of housing in Hongkong is discussed in detail.

In Japan our author comments favourably on the prison management, but points out that similar methods are in force in our Indian prisons. He also notes the "terrible hold" that tuberculosis has on the Japanese, as also in India where its prevalence is not yet sufficiently recognised by government and the public. The satisfactory attitude of the Japanese towards sanitation is noted, which shows the extent to which they have seized upon modern ideas. There is an interesting note on the Japanese Red Cross work in the late war.

In contrast with progress in many parts of the world the account given of "health faking" in San Francisco is not creditable to the citizens of the great republic, though the system of federal hygiene by the so-called "Maine Hospital service" is highly appreciated.

We can strongly recommend this book. It is one that should be in every station library in India.

FAR EASTERN ASSOCIATION OF TROPICAL MEDICINE

The prospectus of the next meeting of this Second Biennial Association is published. The president is Dr. J. Mitford Atkinson, of Hongkong, and the Secretary Dr. F. Clark, Hongkong.

The following is the programme of work to be done and the Secretary invites medical men to be present—

"The Second Biennial Congress of this Association will be held in Hongkong from Saturday, January 20th, to Saturday, January 27th, 1912, and you are cordially invited to attend and to take part in the work of the Congress. The Association is an international one formed to promote the science and art of Tropical Medicine in the Far East."

Saturday, January 20th, will be devoted to the reception of official delegates and visitors, leaving the whole of the following week for the scientific work of the Congress."

The papers offered will be classified, so as to give, as far as possible, a day to each of the following groups of subjects—

Protozoology—Helminthology

Choleræ—Plague—Leprosy—Tuberculosis

Tropical Fevers including Malaria—Beri-Beri—

Dysentery

Surgery—Obstetrics—Infantile Diseases

Climate—Hygiene—Sanitation

The following practitioners have already expressed their intention to submit papers, and other members of the medical profession in the Far East who are willing to introduce subjects for discussion are requested to communicate at once with the Secretary. Papers may be read in either English, French or German, but authors are asked to send a brief abstract in English in all cases.

J. Mitford Atkinson, M.B., D.P.H., Hongkong—
Presidential Address. The progress of tropical medicine during the past twenty five years.

J. C. Dalmahoy Allen, M.D., Hongkong—Blood pressure

Professor Cheng Hio, Canton Army Medical School, Official Delegate from the Government of China—Subject not yet announced.

Major Weston P. Chamberlain, M.D., Chairman of the United States Army Board for the Study of Tropical Diseases as they exist in the Philippine Islands—

(1) Prevention of Beri-Beri among the Philippine (Native) Scouts by the use of undermilled rice, and in conjunction with Captain Edward B. Vedder, M.D.—

(2) The substance in rice polishings which prevents Polynemurus gillimaru and Beri-Beri.

C. Noel Davis, M.B., D.P.H., Shanghai—Beri-Beri
Lawrence G. Fink, M.B., Burma—Blackwater Fever in Burma

George A. Finlayson, M.A., M.B., M.R.C.P., Official Delegate from the Government of the Straits Settlements—Malaria as a factor in the aetiology of biliary calculi.

H. Fraser, M.D., D.P.H., Official Delegate from the Government of the Federated Malay States, Director of the Institute for Medical Research, Kuala Lumpur—Beri-Beri.

Paul C. Fierer, M.D., Ph.D., Official Delegate from the Government of the Philippine Islands—Results of the past two years' work in the study of tropical sunlight.

Dr. Fuith, Staff Surgeon, Official Delegate from the Government of Kiautschou—Nener Untersuchungen über Flecktyphus (latest researches into spotted Fever).

G. Montagu Harston, M.D., Hongkong—

(1) The care of children in the tropics

(2) The care of the eyesight in the tropics.

Victor G. Heiser, M.D., Official Delegate from the Government of the Philippine Islands—Beri-Beri.

C. Montague Hewley, M.B., D.P.H., Hongkong—The laboratory diagnosis of Syphilis.

Major S. P. James, M.B., D.P.H., I.M.S., Official Delegate from the Government of India—Subject not yet announced.

Gregory P. Jordan, M.B., Hongkong—Carbon dioxide snow—its use in private practice in the tropics.

K. Justi, M.D., Hongkong—The Diagnosis of Malarial Fever in the absence of the parasites from the peripheral blood.

O. Muller, M.D., Hongkong—The Surgical Treatment of Dysentery.

J. A. F. de Moraes Palha, M.D., Official Delegate from the Government of Macau—Subject not yet announced.

Sir Allan Peiry, M.D., Ceylon—Indian native coolie immigration.

J. M. Swan, M.D., Canton—Some rare conditions which have been met with in the treatment of vesical calculi in South China.

Richard P Strong, M.D., Ph.D., Official Delegate from the Government of the Philippine Islands —

(1) Immunization against Pneumonic Plague

(2) The Aetiology of Bell's Palsy

H Gordon Thompson, M.D., F.R.C.S., Pakhoi — Surgical Work in South China

Dr Uthemann, Fleet Surgeon, Official Delegate from the Government of Kiu-tschou —

(1) Stadtanlage und sanitäre Einrichtungen in Tsingtau (Town planning and sanitary conveniences at Tsingtao), and will introduce a discussion on —

(2) Die Notwendigkeit der Quarantanebestimmungen an den Küsten plätzen Ostasiens nach Möglichkeit in Übereinstimmung zu bringen (The necessity for uniform Quarantine Regulations for all the coast ports of China)

Captain Edward B Vedder, M.D., United States Army Medical Corps, Manila — An experimental study of the action of Ipecacuanha on Amoebae

G Duncan Whyte, M.B., Switow — Tuberculosis in South China

J P A Wilson, F.A.C.S., (Ed.), D.P.M., Official Delegate from the Government of Johore — Subject not yet announced

In the event of any member of the Association being unavoidably prevented from attending the Congress his paper will be read by the Secretary, if duly forwarded for that purpose.

The meetings of the Congress will be held in the City Hall commencing on Saturday, January 20th, at 11 A.M., with an Address of Welcome by His Excellency Sir Frederick J D Lugard, A.C.M.O., C.B., D.S.O., Governor of the Colony

ALASTRIM OR MILK POX

The most important article in *The Transactions of the Society of Tropical Medicine and Hygiene* (July 1911, Vol IV, No 8) is the paper by Dr Emilio Ribas of Brazil on what is called Alastrim, Amias, or Milk-pox, a highly infective and specific eruptive fever which has been often confused with small pox and chicken-pox and is claimed by Dr Ribas to be a separate entity.

Our readers may remember that we previously commented upon a similar outbreak in Trinidad, which had been called half a century ago by Dr Izett Anderson "Varioloid Variocella". It is probable that Dr Koite has described the same disease in S Africa under the local name of "Amias" or Kaffri Milk-pox. It is, however, not to be forgotten that in the tropics chicken-pox is by no means a trifling children's disease but it attacks adults severely, and the eruption is so widespread that cases have not infrequently been mistaken for small-pox.

Dr Ribas describes the clinical symptoms as follows —

"The eruption usually appears on the third day of the illness, first as a rash, which in a few hours becomes papular and vesicular. If the hand is pressed over the surface at this stage there is a feeling as if there was small shot in the skin. On the fourth day of the eruption and seventh of the disease the vesicles become "pearly" in appearance, and immediately afterwards they become frankly pustular, and especially on the face a reddish aureola surrounds the vesicles, but in severe cases this aureola becomes more extensive. The vesicles then lose the pearly appearance and take on a more milky look, or, at times, that of white wax. On the fifth day of eruption and eighth of the disease the vesicles have become pustules. On the sixth day the pustules begin to dry up and form scabs, some, however, flattening out, do not form scabs."

These scabs are formed in the following manner — A small point, at first the colour of yellow wax and afterwards becoming dark, occupies the centre of each pustule. This point is the beginning of the change in texture of the vesicular wall. There a small opening occurs, thus allowing the liquid contents to escape. This drying on the thin vesicular wall forms the scab. I am of opinion that there is no true umbilication as in small pox, that is to say, in milk pox this appearance is only present when the above mentioned change has taken place, which gives a pseudo umbilication. In small pox the true umbilication is due to the actual structure of the vesicle.

When the resulting scab falls off, in the form of a small dark coloured scale, the underlying surface is seen to be slightly elevated compared with the surrounding skin. The colour is dark red, but this disappears on pressure, and at the end of a certain time these macula disappear altogether. Only in rare instances, and that where the disease has been of a confluent type, do the marks remain permanently.

The eruption also appears on the mucous membrane of the mouth and other parts.

In cases of moderate intensity the duration of the disease may be put at fifteen days, but in severe confluent cases it may last twice this time. Confluence is most frequently observed on the face and lower limbs, rarely on the arms and trunk.

Alastrim has the same incubation period as small pox, and during the period of invasion there is a rise in temperature till the appearance of the rash. The temperature may reach 40°C to 41°C. The pulse rate is in proportion to the temperature.

Other symptoms are sore throat, swelling of cervical glands, and coryza, also headache and backache are common.

The opinion of the meeting seems to be that the disease was a "modified" small-pox, and none of the "tropical" experts present seemed to have realised how severe chicken-pox could be in adults and in the tropics.

ANNALS OF TROPICAL MEDICINE

The second number of the fifth volume of these valuable annals is dated 1st August 1911, and contains much of interest to medical men in the tropics.

Prof U Gabbi of Rome has an interesting article on the occurrence of certain "tropical" diseases in Southern Italy.

As might be expected Mediterranean or Malta fever is well-known, and it is said that from 3 to 17 per cent of the goats in Sicily and south Italy are infected.

Another more distinctly tropical disease, Kala-Azu,* has been demonstrated in Italy by Francesco of Naples and Prof Gabbi claims that he and his students have shown that youths and even adults are affected by Kala-Azu, "though very seldom" while it is more common in children. It appears early in spring and is "greatly disfigured" among the poorer classes in the littoral towns of the south, moreover typical tropical oriental sores have been seen in the same places.

Three day's fever or Pappatnei (sandfly) fever has also been recognised and it is regarded as a regular summer disease.

* In our next issue we shall give a summary of an article on this subject by Sir Wm Loishman — ED., I.M.G.

In another article Mr R Newsted (in a report of the 23rd expedition sent out by the Liverpool school) describes the Pappataci flies (*Phlebotomus*) in the Maltese Islands (a paper which we propose to abstract in another column).

Dr J W W Stephens has an interesting note on the anti-malarial operations at Ismailia. He states that these operations have resulted "in completely freeing the town from anophelines and hence from malaria".

Dr Stephens gives reasons for believing that malaria had existed in Ismailia before the introduction of the enlarged freshwater canal in 1877.

The work done on the advice of Sir Ronald Ross consisted of draining numerous marshes, large and subsidiary, oiling of pools, &c.

Stephens points out three factors which largely contributed to achieving this success, viz., (1) Ismailia is in the desert, (2) the intermittent irrigation scheme with a fall of 20 feet from the freshwater to the Maritime canal, and (3) the presence of fish in all the drains.

The cost of the operations was very considerable, viz., an initial expenditure of £2,000, another £4,000 on draining swamps at the rate of £4 an acre.

The permanent expenses are £312 in keeping the drains in good repair, and apparently £720 per annum for disinfection, hunting larvae, &c. The total is given by Dr Stephens as follows —

1903	£1,528
1904	£1,039
1905	£ 696
1906	£ 678
1907	£ 625
1908	£ 672

Quinine prophylaxis was also employed and it cost sums (variously estimated) from £656 in 1902 to £237 in 1908.

Dr Stephens thinks that the decrease in malaria in 1903 was "in considerable part due to quinine prophylaxis," though (he quaintly adds) the same result would have been arrived at without taking a "grain of quinine." Another valuable report is on human trypanosomiasis in Gambia by Dr Todd and S G Wolbach.

Dr W Yorke and R W Nauss have a valuable report on suppression of the urine in black-water fever, and they consider that, under certain conditions the mere passage of haemoglobin through the kidneys is sufficient to cause suppression owing to the occlusion of the lumen of the renal tubules by plugs of granular material derived from the haemoglobin.

The article on organic phosphorus, beri-beri and diets is deserving of fuller extracting than we can here give it.

TAON OR INFANTILE BERI BERI

DR F C CALDERON of the University of the Philippines, has a useful article in the *Bulletin of the Manila Medical Society* (August 1911)

on the treatment of what is locally called Taon, or Taol.

This disease is very prevalent in the Philippine Islands and destroys many infant lives. "Children apparently healthy are seized suddenly by violent convulsions a piercing cry, or an intense asphyxia followed by death," such is Dr Fernando Calderon's brief description.

The disease has been considered to be infantile eclampsia, but its claim to be an infantile beri-beri was made out by Dr Manuel Guerreo in 1904, basing his observations on 103 clinical cases, and since then many practitioners have agreed that the complaint is a clinical entity and is a form of toxæmia due to beri-beri and transmitted to the child by a mother or wetnurse who has beri-beri, through the milk. Dr McLaughlin and Dr V L Andrews have also shown that of the infants who die in Manila no less than 74 per cent are breast-fed infants—so that what saves infants in other countries kills them in Manila. As a result of these facts an institution called *La Gota de Lache* was established and by the issue free of sterilised milk has saved already the lives of many infants.

ORGANIC PHOSPHORUS BERI BERI AND ALLIED DISEASES

IN *Annals of Tropical Medicine* (August 1911) Dr G C E Simpson and Mr E S Edie have a very complete article on the relation of the organic phosphorus contents of various diets to disease of nutrition particularly beri-beri. The article is preliminary and consists largely of an abstract of Schaumann's important monograph—which, as it is little known in India, we may here abstract.

We need not refer to the account given of the well-known work of Braddon, Fraser and Stanton and of Holst—but quote some of Schaumann's conclusions as given in the article referred to —

"Schaumann further gives exhaustive tables of the composition of various food stuffs grains (fresh and prepared), rice, beans, potatoes, meat, etc., both in the fresh and dried states, showing their composition with reference to protein, carbohydrate and fat, and in particular their various phosphorus containing compounds—inorganic phytin like compounds, nucleins and phosphatides—and discusses the present state of our knowledge of the metabolism of these bodies."

"Schaumann next proceeds to a critical review of the various theories of the etiology and points out that neither place, climate, nor season appear to be of importance, and that no specific organism has been isolated though many bacteriologists, and even Koch himself, have made careful investigations. Fletcher and Fraser also carefully excluded the question of infection since they showed that whether Beri-beri was present or absent among the inmates of a building or compound it could be banished by feeding with partly milled rice or called forth by feeding on wholly milled rice."

"Braddon, with respect to Beri-beri, and Eijkman, with reference to Polyneuritis in birds, at first assumed that some toxic agent was present in the kernel of the grain

which gave rise to Beri beri and that the antidote to this toxin was present in the pericarp, and that so no bad effect followed feeding with the whole grain, but, if the pericarp were removed, the toxin already present or elaborated during digestion was free to exercise its effects.

Schaumann then considers the theories which ascribe the development of Beri beri to faulty nutrition, and he calls attention to the theories of Nocht (1903), the latter ascribes both the multiform manifestations of Tropical Beri beri and the usually milder ship Beri beri (which appears to be somewhat allied to scurvy), to dietetic errors, and lays special stress on the fact that it is not a question of defect of the main components of food stuffs—protein carbohydrate and fat—but of some subtle defect of the less known constituents—enzymes, complements, compound proteids, etc.

Schaumann himself, however, is inclined to consider the substance or substances of importance to be organic compounds of phosphorus. He resolved first of all to investigate the possibility of the neuritis being due (1) to the development of oxalic acid by fermentation or to acidosis from deficiency of alkaline salts in the grain, (2) to the removal of ferments or other thermolabile substances by mulling or 'denaturation,' and (3) to investigation of the influence of phosphorus compounds, organic and inorganic.

He points out that the exact chemical nature of the phosphorus compounds in food stuffs and the body is but imperfectly known, that the methods of separation are but approximate and uncertain in many cases, and that the isolated products are probably modified by the processes of extraction, and so differ in physiological effect from their precursors.

Subject to modifications necessitated by the light given in the process, he resolved to try diets, as polished rice and denatured foods, which were known to produce neuritis, etc., and see whether any favourable results are obtained by the administration of such diets, with the addition of —

1 Known organic and inorganic compounds of phosphorus

2 Small amounts of substances rich in phosphorus e.g., rice meal, yeast, Katjang idjo, wheat meal, testicular extract, or extracts from toe, etc.

3 Phosphorus compounds isolated by him from articles of food, e.g., yeast, Katjang idjo, etc.

The following conclusions are drawn —

I Food stuffs which lead to the development of Polyneuritis in animals are characterised by a low content of phosphorus or of certain organic compounds of phosphorus. This may be either fundamental or be caused by artificial processes.

II Animals are not protected from the ill effects caused by such diets by the addition thereto of proteids, inorganic salts, inorganic phosphates, or the synthetic organic compounds of phosphorus (calcium glycerophosphate, albumen metaphosphate).

III The addition of certain substances, rich in organic phosphorus, to such diets exercises both a protective and a curative effect. Yeast, rice meal, wheat bran, peas, Katjang beans, and testicular extracts are the chief substances with this power. Carnivora and herbivora, however, react rather differently to testicular extract, the former are completely protected, the latter only in a less degree.

IV Artificially separated organic phosphorus compounds of various kinds, prepared from these natural protective substances, exercise only a moderate and transient influence. Such compounds include yeast nucleic acid, phytin like compounds from Katjang, phytin from rice meal, and possibly certain phosphatides.

V Apparently the protective or curative effect of these substances is dependent not on any one of their organic compounds of phosphorus, but on the collective effect of a number of these. Animals do not apparently possess the power of forming the organic phosphorus

compounds necessary to their economy from inorganic phosphates by their own metabolism, but are dependent for their provision on the plant world, as they are for other classes of food stuff (e.g., protein and carbohydrate).

VI The metabolism of phosphorus and nitrogen stand in close relationship to one another.

VII Spontaneous or experimental polyneuritis in animals appears to be a disease of metabolism, attributable to the lack of some specific organic phosphorus compounds whose identity is still uncertain.

Schaumann next discussed ship Beri beri, a well-known disease in Indian waters and on light-houses.

"Preserved vegetables carried on one ship were very rich in organic phosphorus, and had been found to be extremely valuable in the treatment of the sailors stricken with Beri beri. Preserved meat is also rich, particularly in lecithin phosphorus.

Schaumann considers that the cause of Beri beri on ships lies in the lack of organic phosphorus compounds in the diet of the sailors. This is especially noticeable on the return voyage (especially in ships loading home from nitrate and guano ports where fresh meat and vegetables are not obtainable), in part owing to the sailors being partly driven to bread, rice, etc., through the mouldiness of the peas or their hardness from keeping (rendering them impossible to soften even when boiled in soda) or the decay and smell of the meat. To this is added in other cases the loss of organic phosphorus in the salt meat due to the action of the lye, and the similar loss in the leguminous foods owing to standing or to boiling with soda.

He calls attention again to the affinity between scurvy and ship Beri beri (vide also his animal experiments), and suggests that scurvy may be found to be due to use of stale vegetables, and Beri beri to use of rotten or stale flesh—the important factor in each being lack of organic compounds of phosphorus.

As a curative agent, he says, all sailors know the value of fresh meat and vegetables. As a preventive agent, he suggests that it might be possible to carry dried yeast, rice meal or testicular extract for use when the ordinary diet becomes inadequate, and especially lays stress on the probable value of requiring all ships engaged on voyages where fresh provender may be difficult to obtain to carry a supply of Katjang beans in sealed (sterilised) cases. In the future, he hopes a more active principle requiring but small bulk may be isolated.

Sailing ship Beri beri is a disease of metabolism dependent on lack of organic phosphorus in the diet.

Schaumann and Werner tried the therapeutic effects of phosphorus rich compounds on Tropical Beri beri and obtained improvement by the use of yeast, nucleic acid, testicular extract etc. though the improvement was not so marked as in polyneuritis in animals, owing to the more advanced lesions in these cases requiring longer for regeneration. (Fat free yeast and carefully prepared nuclein should alone be used.) Katjang beans, peas, and also the peptic extract of Katjang are also very valuable.

On these grounds it appears clear that Tropical Beri beri resembles experimental Polyneuritis and ship Beri beri in being due to lack of organic phosphorus in the diet, but it appears to be due to a chronic deficiency of long duration, with severe deep seated lesions requiring a long time to cure. The experimental neuritis in a goat already described is analogous to Tropical Beri beri. The other experimental cases and ship Beri beri on the contrary, are due to a sudden large deficiency of organic phosphorus and the lesions though severe, are not deep seated, and are rapidly recovered from.

In the majority of cases, Beri beri is due to a gross deficiency of the organic phosphorus, in the diet. In other cases the differences may be individuals in the patient, since some individuals require much larger amounts than others, and others again may be unable to absorb and assimilate the compounds,

though present in the diet Schaumann quotes the case of a German colonist, who, after being very ill with malitia on the Amazon, developed Beri beri on the voyage home though on an ample diet, in this case the intestinal absorption appeared faulty, as there was a great deficiency in urinary, and a very large increase in the faecal phosphorus.

Occasionally, epidemics of Beri beri appear to be due to a bacterial infection of the gastro intestinal tract, either through the catarah interfering with absorption or to the bacteria (or their products) absorbing or splitting the organic phosphates before they could be absorbed.

Tropical Beri beri is a disease of metabolism due to the amount of organic phosphorous compounds assimilated being below that essential for the human organism.

This is in the majority of cases due to deficiency of organic phosphorus."

Concluding Considerations

"A whole cycle of other diseases in all probability have a similar etiology to that of Beri beri, more especially ship Beri beri. Scurvy has already been conclusively shown to be of this nature by a whole series of observations, and to all appearance Infantile Scurvy, Rickets, and Osteomalacia are also included. Pellagra and the form of malnutrition described by Czerny and Kellner in artificially fed children may be further examples.

The suspicion arises that all these diseases may be due to deficient assimilation of organic phosphorus, but it is difficult to understand how a similar cause can produce the different effects shown by the symptoms in these diseases.

It has already been shown that the animal organism is not adapted to build up organic phosphorus compounds for itself, but depends for these on the plant kingdom, and it is probably equally unable to form compounds of one group from those of another (e.g., nucleo proteins from phosphatides).

Since different groups play different roles in the economy of man, it is certain that deficiency of each group will have its own special effect, and in addition this will be complicated by an associated influence on the general metabolism, for example, inorganic compounds would react on the alkaline earths of the bones, nucleo proteins would react on the proteins, etc.

Individual differences would further intervene to complete the picture, more especially age differences, and infancy, childhood, puberty, pregnancy and old age would, in particular, have a far-reaching influence.

So by deficiency of single groups, or of combinations of groups of phosphorus compounds, various symptom complexes—different diseases—may be originated. Thus lack of nucleo protein in adults is probably connected with Beri beri, in children a similar deficiency might give a different disease; deficiency of phosphatides may give yet a third, a combination of the two will give yet another picture."

THE DISPOSAL OF REFUSE IN THE TROPICS

MAJOR R. J. BLACKHAM, R.A.M.C., read a useful and practical paper on the disposal of refuse in the tropics at the recent Belfast meeting of the Royal Sanitary Institute.

He discussed four methods of sewage disposal, the dry system, the wet, incineration and septic tanks.

The defects of the dry-earth system as applied, not in jails where labour is plenty and is controlled, but in cantonments and municipalities, are obvious and consist in the fact that

faecal matter, receptacles, buckets, &c, are exposed for periods to flies, the handling of the night-soil and emptying of it into carts is open to many objections, on this matter the writer quotes the following pointed remarks of Col Forman, A.M.S.—

"I believe that we can in great measures stamp out the enteric scourge in India, if we adopt the following suggestions—(1) remove latrines well away from cookhouses, (2) make them light and airy structures, easily moved if necessary, (3) pave them with cement, (4) abolish dry-earth and substitute crude petroleum or carbolic, (5) let the seats be movable and the pans so placed that slopping is impossible, (6) eliminate flies, (7) ensure scrupulous cleanliness, not make believe, but scientific, (8) provide early sterilization by boiling, if possible on the spot and before transit, (9) secure efficient means of transit in water tight vehicles, (10) arrange for frequent sterilization of all receptacles, and last but by no means least, see to (11) careful and scientific disposal at a distance."

COLONEL W. A. MORRIS, A.M.S., strongly advocates the wet-system of conservancy—

"A wet system of conservancy is directed towards the destruction or inhibition of the growth of bacilli at the moment they leave the human subject. It is especially directed against those bacilli of disease which are found in the liquid and solid excreta, and the inhibition of their action or destruction is effected by disinfectants, under which term are included deodorants, antiseptics, etc."

This system may be carried out with either a coal-tar disinfectant, such as saponified cresol or a solution of perchloride of mercury. The cresol solution, which is now in use in all military cantonments, is made up by adding half an ounce of cresol to a gallon of water. One pint of this solution is placed in each receptacle.

Colonel Morris strongly advocated in lieu of it a 1 in 2,000 solution of perchloride of mercury.

On the subject of incinerators, Major Blackham has some good remarks. One thing is certain, they are not as cheap to erect or to work as their inventors and advocates have made out. As for the Raith incinerator, Major Blackham writes as follows—

"The incinerator is set going by placing a quantity of litter and dry refuse on the framework, and setting fire to it. When combustion has proceeded for some time the total contents of the litter pans are emptied over the smouldering material. I frankly confess that I do not believe in this system. In my experience heavy rain invariably puts these incinerators out, and the exposure of smouldering material to the strong gales of the winter and that storms of the summer must, and does, result in the addition of much objectionable matter to the dust which is blown in all directions."

Our own experience of this incinerator in a Bengal jail is very similar.

Major Blackham mentions but gives no details of the Umballa B incinerator, recently invented at Indian Army Headquarters. We are glad to see he quotes and approves of Major Clemesha's pronouncement as to the combustibility of Indian street rubbish, this rubbish usually will not burn.

Major Blackham is in favour of septic tanks and quotes largely from Major Clemesha's invaluable book on the subject.

This paper is an excellent and practical one.

REVISION OF THE B.P.

We have received the second and third reports of the Committee embodying the results of their work from 1908 till May 1911 in connection with the revision of the British Pharmacopœia.

No date is yet mentioned for the new edition, which need not be expected for some years.

The second report deals with the following drugs, extracts, Belladonna, and Glycyrrhiza, Hydastis, Ipecacuanha, Nux Vomica, Opium, Sarsa, Taxaxacum, with Ferrum Carbónas, Ferrum Sulphuris, Félix Mas, Guaiacum, Mercurio, Iodine, Hyoscyamus, Ipecacuanha root, resin of Jalap. The third report is of a similar character, and deals chiefly with descriptions, tests, and nomenclature, and strength.

The changes recommended are also frequently mere alterations in strength to bring the preparations into approximate conformity with the International Agreement.

MEMOIR No. 2 of the Indian Civil Veterinary Department (Calcutta Thacker, Spink & Co.) is modestly entitled "Collected Notes" but it contains several papers of interest, e.g., Mr A. S. Leese, on the natural transmission of Sura. The two flies concerned are tabanus haematopota and stomoxyx. The latter is the most common biting fly on the Naini Tal and the Dehra Dun roads.

Mr S. H. Gaiger has an article on haemorrhagic septicæmia, a disease only differentiated in India within the past 10 years. It rarely attacks horses, but it is very common among buffaloes. The same writer describes a worm *Lungulata tenoides*—a parasite very common in pariah dogs in India.

A writer (*J. A. M. A.* June 10) praises the use of hexamethylenamin better known under the name of *urotopine* in commencing-colds, 15-grain doses four times daily. The irritating action on the bladder must be remembered.

SIR RONALD ROSS discusses the question why Yellow fever has not spread in the Old World as it has in the New. The Stegomyia fasciata is found widespread in Africa, India and China. He concluded that the number of *S. fasciata* is not sufficient, "the number must not only be high, but high enough to maintain the disease and extremely high to cause a proper outbreak."

DR SR J. CROLEY asks us to call attention to the fact that in his article (*I. M. G.*, September 1911, p. 336) he intended it to be understood that the chlorotone was to be given *per rectum*, and not hypodermically.

ACCORDING to *Berlin Klinische Wochenschrift*, Bacelli used very successfully a subcutaneous injection of carbolic acid in tetanus cases. He uses a 2 or 3 per cent watery solution of carbolic acid which he injects subcutaneously. He begins by very small doses, and as soon as tolerance is established by examination of the urine, he rapidly increases the dose till the patient takes one to one and-a-half grammes in 24 hours. He says that tetanus patients tolerate carbolic acid in surprisingly large doses.

RECENT research in Texas has established the existence of Mediterranean (Malta) fever in that State.

EPIDEMICS of cerebro-spinal fever and of acute poliomyelitis has been reported from Devon and Cornwall. Both diseases have been prevalent in the United States for some years past and poliomyelitis has recently been very much in evidence.

IN Ireland with 3 million inhabitants there were an average strength of 24,394 lunatics in confinement in 1910, in Bengal with 57 million inhabitants there is accommodation for about 1,000 lunatics. No wonder we have said that local Governments in India get off very cheaply in the matter of asylums.

On 1st January 1911 there were 133,157 certified lunatics in England and Wales out of a population of 45,216,665 at the recent census.

We call the special attention of all I.M.S. Officers to the book now in the press on the Indian Medical Service, by Major B. Setor and Major Gould, I.M.S. It will be found extremely useful to all men in the Service.

REVIEWS

Tropical Hygiene for Anglo Indians and Indians.—By HON'BLI SURGEON GENERAL C. P. LUKIS, M.D., C.S.I., and MAJOR R. J. BLACKHAWK, R.A.M.C. Calcutta, Thacker, Spink & Co. Price Rs. 3.

IN a speech in the Vice-regal Council it will be remembered that Surgeon-General Lukis stated that the question of the prevention of plague was not one of expenditure of large sums of money, but was one of domestic hygiene, and it was necessary, therefore, to educate the native of India up to this point.

The St. John Ambulance Association in England had long undertaken popular instruction in Home Hygiene and Sanitation, but its lectures are not adapted to Indian conditions,

hence Surgeon General Lukis and Major Blackham have written this excellent book on tropical hygiene, for use as a manual for the senior certificate in Home Hygiene of the St John Ambulance Association. The book is above all practical, and is clearly and simply written.

It first deals with the communicable diseases of the tropics, malaria, cholera, dysentery and diarrhoea, plague, typhoid, tuberculosis and small pox.

The synopsis of present knowledge as given in the chapter on plague is admirable, simple and complete.

The chapter on typhoid is good, but on p. 9 surely "Roberts" is meant not "Rogeis" as author of the book on *Enteric fever in India*. The value of inoculation is strongly urged.

We are glad to see the enormous prevalence of tuberculosis insisted upon, though this was done before the article in *Journal of Hygiene* in 1907 appeared. There is an excellent chapter on malaria, Kala-Azari and sandfly fever, and Sir R. Ross' and Mr. Jones' rather wild statements as to the decay of the Roman and Greek empires as being due to malaria are brought in. They would be impressive if they were true.

There is a vast amount of useful information in the chapter on malaria and especially on the campaigns against malaria.

The chapter on air and ventilation is excellent, as is also that on water supplies. The chapter on food contains much of value and useful dietaries are suggested for natives of Bengal and of upcountry. The remarks on use of alcohol are to the point and we agree that if we continue to take our 'peg' it is because we like it and not because of any pretended good it does us.

The chapter on clothing is useful and the restriction of the so called cholera belt to night use we approve of. We are not convinced of the value of solaro cloth, it is hideous to look at and recent experiments in Manila do not support this colour theory. The remarks on the Indian dhobi are very much to the point.

The other chapters on disposal of refuse and on insects and disease are excellent in every way.

We have nothing but praise for this admirable manual. It is a very useful and complete hand-book of tropical hygiene.

The Natural History of Epidemic Diarrhoea—By O. H. PETERS M.D., D.P.H., Cambridge, at the University Press, 1911.

THIS is a very valuable study of epidemic diarrhoea, the observations for which were made in Mansfield during the summer and autumn of 1908.

The substance of this book has already appeared in vol. X of the *Journal of Hygiene*, and readers who have there read it will be glad to have the papers in the more convenient form of a book.

It is in itself not only a study of a disease, but of slum life in big towns in England.

The author rightly lays stress on the education of the public and the following are the chief points on which the public especially needs education—(1) that the disease is a specific and widespread one—popular theories as to flux and teething are dangerous and should be disregarded.

(2) The disease is infectious—a fact not yet appreciated.

(3) The disposal of the stools of children, especially young children in the diarrhoea season requires the strictest attention, because the disease is conveyed by the stools, and the clearing up and disinfection of all articles (floors, cloths, etc.) stained by the stools is imperative.

4. Breast-fed children escape, and if not breast-fed very stringent precautions are needed as to care of the milk.

It is clear therefore that the prevention of this terribly fatal disease of infants, necessitates general public measures of sanitation, as regards storage and protection of food from pollution, pure water, milk, &c., and even more important particular measures of private cleanliness not easily and not always obtained in the houses of the poor.

The book is a valuable one and should be studied by all medical officers of health.

Collected Papers—By the STAFF OF ST MARY'S CLINIC, Rochester, Minnesota, U.S.A.

ROCHESTER, Minnesota, is the surgical Mecca of post-graduate students in America, and the Mayo brothers' are Rochester, a town, which has in fact grown with the reputation of two brothers whose name is familiar the surgical world over.

St Mary's clinic, the private surgical establishment of the Mayo's, perhaps larger, certainly better equipped and officered than most similar public institutions, though in a remote part of the States, is sought after by patients from the world over, and therefore it is not extraordinary that the annual number of major surgical operations performed by the staff runs into the thousands, or that surgeons flock there to learn.

The handsome volume before us is only a partial record of St Mary's work, periodical contributions of the staff to surgical literature, brought together primarily for the satisfaction of the staff, with little thought of the public. But it is for the most part a record of the experiences, the growth of the surgical acumen, the evolution of the methods and the technique of the Mayo's, men whose surgical range has been enormous, whose success has been phenomenal, whose matured opinions command respect. They illuminate every subject they touch in these papers, born from a wealth of research, yet brief, direct, and clear. We heartily commend the volume to our readers.

Report of a Series of Cases of Syphilis treated by Ehrlich's Arsenobenzol at the Walter Reed General Hospital, District of Columbia —By Capt HAROLD W JONES, Medical Corps, U.S.A. (Reprint from Boston Medical and Surgical Journal)

The object of the writer, in publishing these interesting notes, is less to show what G.O.C. is capable of accomplishing in suppressing the manifestations of syphilis than to set forth the best method of administering the drug to obviate relapses and incomplete cures. A concise tabular statement accompanies the notes, from a scrutiny of which the reader can for himself readily glean the conclusions offered by the author, viz., that the intramuscular injection of the drug, though more painful, gives better results than the intravenous method, that, apart from the question of permanent cure, considerable relief from suffering was effected among the cases treated and the period of infectivity, of the lesions materially lessened. The last advantage, as the author suggests, should alone justify the employment of the drug because of its great importance from Military and Sanitary standpoints. The author found the most satisfactory site for injection to be the upper portion of the middle third of a line joining the anterior superior iliac spine and the ischial tuberosity, 10 c.c.m. being slowly injected into each buttock to a depth of about $2\frac{1}{4}$ inches.

Enteric Fever in the Tropics —By A. N. GHOSH Calcutta Hilton & Co Price 12 annas

This is a useful little résumé of our knowledge of typhoid fever in tropical countries. The existence of true typhoid fever in India was for long considered doubtful, and it is only within the past dozen years that the use of new tests has clearly proved it not inconsiderable prevalence among the natives of India.

Dr Ghosh says that "symptoms of enteric fever are mentioned in the *Kaya Chikitsa*, a portion of the original *Ayur Veda*, "the sacred medical record of the Hindus," and it may satisfy the believers in the imaginary golden age of Bengal to learn that "intermittent fever" was recognised in those ancient days. Dr Ghosh tells us that "in India, all classes and races are equally affected" by enteric fever, a statement with which we entirely agree. The symptoms, diagnosis and complications of this always formidable disease are well discussed in Dr Ghosh's pamphlet, and the instructions for treatment are elaborate and complete. We confess we are not as much impressed as Dr Ghosh is as to the value of the use of hydrochloric acid and oil of cinnamon as a specific treatment. We remember a long series of hospital cases successfully treated by no more potent a drug than camphor water.

The little pamphlet is deserving of perusal.

A Synopsis of Surgery —By E. W. H. GROVES, F.R.C.S. John Wright & Sons, Ltd., 1911 Thrid Revised Edition Price 9s 6d

This is an eminently successful students' manual, only 18 months have elapsed since the appearance of the second edition, and now an enlarged and revised edition has appeared. In the new edition many useful matters have been added, especially about new methods of treatment.

This synopsis is a very successful attempt to epitomise the salient facts of surgical practice. It is the work of one who has taught many students. In our own student days we made similar synopses of "Eichsen" or of "Bustow" and most useful they were. Now the student finds these handbooks ready-made and carefully made and of all such, we know none better than Groves' Synopsis, always remembering that it is a printed note-book and not a substitute for Rose and Cawless.

Domestic Hygiene for Nurses —By F. J. SMITH, M.D. London J. F. A. Churchill, 1911 Price 2s 6d net

This little book, by Dr F. J. Smith, well known as the recent Editor of Taylor's *Medical Jurisprudence*, is intended for nurses and successfully claims to teach them so much of physics and of chemistry as is necessary to the reasonable understanding of domestic hygiene.

The book treats in a clear and simple manner of the nature of matter, of heat, light, air and water. The chapter on ventilation and heating is particularly good.

This little book can be confidently recommended for the teaching of nurses.

Quinquennium of Medicine and Surgery, 1906 to 1910 —Edited by J. W. BALLANTYNE, M.D., F.R.C.P. Published by William Green & Sons, 1911 Pp 411 Price, 10s 6d net

There are few branches of medicine and surgery which do not afford sufficient scope, in these days of progress, to be taken up as a life-study. But the vast majority of medical practitioners have not the opportunity to specialize to any extent. Post-graduate study becomes a necessity, as also does a careful study of current medical literature. The 'Quinquennium of Medicine and Surgery,' edited by Dr J. W. Ballantyne, will be found to be a most useful work for reference for those who have not the time for text-book reading. The book does not reach the wearisome length of an encyclopaedia, but at the same time it contains just those additions to medical knowledge, which most of us wish to keep in touch with.

The chief complaint which one is inclined to make is against the arrangement, or rather as

regards the amount of space allotted to some of the subjects. For instance, nearly 28 columns are given up to a discussion of ectopic pregnancy while, the Röntgen Rays and Radium are dealt with in only 9 columns. Some of the other subjects are also made to suffer for want of space. Considering, however, the size of the book, it will be found to contain a vast amount of up-to-date information, well put together and in many places aptly illustrated.

Medical Diagnosis—By W. B. SAUNDERS COY

WE have become accustomed in recent years to the American invasion in the medical book world, and the high place many of these publications have taken, has been a well-deserved tribute to their excellence.

The tendency of late has been for the busy practitioner to turn to books which are of the Encyclopaedic style condensing and ranging the main facts and theories on the subjects treated for ease of reference and rapid survey. This form of literature was bound to come for it is no longer possible for a medical man to keep abreast in the press of routine work with all that is new in the many departments of his science. To such a man, detached or isolated at Home or abroad, this volume on "Medical Diagnosis" will come as a grateful aid. Its survey includes all that is valuable in the later work of the clinique and laboratory, and while it does not aim at teaching methods and technique in the laboratories, it does describe lucidly and succinctly the various chemical, biological, and bacteriological aids to diagnosis which the nearest laboratory can place at one's disposal, and should thus materially assist the practitioner in suggesting new processes whilst it will enable him to weigh and value correctly the results sent him.

The volume is a bulky one of nearly 1,200 pages, well got-up, with a good and sufficient index. The chapters on physical and clinical diagnosis are well up-to-date, and the different systems in detail are carefully worked out. The chapters on Examination of the Blood, the Nervous system, and the Gastro-Intestinal System are very helpful, and one can find little fault with the subject-matter generally or the method of presenting it. The illustrations are excellent and the cinematograph has been used with good effect.

One would prefer such a work in two or three smaller and handier volumes, and the addition of a bibliography under each section would greatly enhance the value of the work. Readers in India will perhaps miss something in the tropical diseases, sections especially in the discussion of continued fevers, but the book is worth buying, and the "Tabloid form" of its differential tables will commend it to the busiest.

ANNUAL REPORTS.

BOMBAY BACTERIOLOGICAL LABORATORY

THE report from 1910 is the last which will be written by Colonel, now Surgeon General, W. D. Brunnerman, M.D., I.M.S., and is extremely full of interest.

It is indeed difficult to make extracts as so much of the report is worthy of reproduction.

Inoculation.—We may quote the following—

In spite of the wide distribution of pamphlets and papers containing statistics proving the efficacy and harmlessness of inoculation, and setting this forth in the plainest language in English and the various vernaculars, it is a melancholy fact that this life saving operation remains the most unpopularity and most despised of all plague measures. This being so, it is well to enquire as to the causes of this unpopularity so that means may be devised for its removal.

Even among the educated, there is a widespread notion that inoculation is equivalent to giving plague, though no doubt in a mild form, from them the idea has therefore spread to the ignorant masses that inoculation starts an epidemic of plague in a place. This has perhaps been originated by the translation of the verb "to inoculate" by the vernacular term "to inject plague" or "to inject plague juice." This writer has already been brought to the notice of Government and means taken for its amendment in future translations (*vide* Government Resolution, General Department, No. 6374 of 19th December 1910), but the mischief already done will be difficult to remove. Another objection often put forward is that inoculation causes infecundity in those operated on. How this notion arose was long a mystery to the writer, but it has been suggested to him by a friend that it is probably due to the use of the bacteriological term "sterile" applied to the condition of the vaccine as sent out from the Laboratory. This term as thus used means that the prophylactic fluid contains no living organism or microbe, but when translated into the vernacular the word used is the same as that for infecundity or impotence. It is not matter for surprise then that those ignorant of bacteriological terms should have got the idea that the use of such a sterile fluid would cause sterility among the people also.

Another and perhaps the most important fact is the state of almost universal ignorance that exists among those servants of Government who come most in contact with the people, and who could influence them, as to the nature of the prophylactic and the manner in which it gives rise to immunity.

It would be very interesting to find out how much time officials of the standing of Deputy Collectors, Mamlildars, and Sheristadars, etc., have given to reading the plague pamphlets that have been so freely distributed. One has only to ask them simple questions about the nature of plague, or inoculation, to ascertain that this kind of literature is not much to their taste. Many of them have never seen the operation performed, and on being questioned confess that they know of its effects from hearsay only, and have never investigated the truth or otherwise of the statistics available. As to the nature of plague and its spread they have probably some fanciful theory of their own, such as that the disease is due to the infected atmosphere.

Such being the case, the remedy would appear to lie in the assembling of all Government servants at convenient places, and their instruction by lectures and lecture demonstrations given by the medical authority in the district supported by the Collector. This last is a most important matter, for if the Revenue Subordinates do not think the Collector is personally interested in the matter, nothing effective will be done. The writer is convinced that the success or failure of inoculation in a district depends on personal influence, and the officials of most influence are the Collector and the District Surgeon.

If all the officials in a district are thoroughly in earnest in pushing inoculation there will be no difficulty in educating the people to take to this measure. It will mean hard work for the officials, but the saving of life, which the following statistics prove can be obtained, is surely ample reward. One cannot expect the unlearned to accept inoculation if those immediately above them do not practise what they preach. If the Mamlildar and his family are not inoculated, how can one expect the peasant, who looks to him for leading and guidance, to submit to the operation?

The following notes on the outbreak of Plague in Seistan is of interest:

The first reported case occurred in a man who, it is believed, had never left the district. His wife and family and many of the neighbours took the disease and most of them died, the population of the largest of the Khels affected being reduced to half by the epidemic. The epidemic was at first confined to the islands in the marsh but eventually spread south to the mainland.

Seistan is practically an oasis, surrounded by vast deserts very sparsely inhabited by a few nomadic tribes. The nearest centres of population are —

Quetta, at a distance of 40 days' journey

Bandar Abbas at a distance of 40 days' journey

Kerman, at a distance of 25 days' journey

Mesched at a distance of 25 days' journey

When plague broke out among the fishermen the nearest known plague infected area was at Kuchi, 600 miles to the South east, and the next was in the province of Astrachan, 900 miles to the North west.

There was ample room therefore for speculation as to the origin of the outbreak. The theories may be classified under the following heads —

(a) The presence of an indigenous variety of Plague in Persia. None such is known however.

(b) The disease might have been *Pestis minor* transmitted by the Governor General of Khorasan and Seistan, but a disease causing 90 per cent of deaths can hardly be thus denominated.

(c) That the disease was spread from diseased cattle, as there had been a great mortality among them from *Tusfangi*. This disease however was subsequently proved to be anthrax, so this theory may be discarded.

(d) That the disease spread from a previously infected area. As we have seen the nearest infected place was Karachi, and it is known that a Kafila carrying second hand clothes arrived from Karachi a month before plague broke out in Seistan. This seems a very probable hypothesis, but the medical officer who wrote the report dismissed it on the following grounds —

(1) The clothes consisted of put worn uniforms of officials of railway lines in England where there was no plague.

(2) The original bales passed unopened through the plague infected port of Kuchi and were arranged for camel transport at Nushki which was free from plague.

(3) The caravan route from Nushki to Seistan was said to be free from plague at the time.

(4) There is nothing to show that the Sayyad who first developed plague had brought any of the imported articles, nor was any such clothing found subsequently when measures were taken to burn the property of infected households.

Against these arguments we must set the following —

(1) Other things besides the English uniforms may have been imported by this caravan.

(2) The bales were covered with gunny cloth which is a very favourite haunt of rats.

(3) The gunny bags may have been bought in Karachi though the clothes were not.

(4) Rats are apparently more abundant in the reed huts of the Sayyads, where plague broke out than in the brick houses with domed roofs of the towns, it is therefore more likely that plague would start in the former.

Finally, cases are reported by the first Plague Commission where apparently plague infection has remained dormant among clothes for long periods, much longer than the 40 days' journey on camels from Nushki to Seistan.

The reporting medical officer gave a theory that infected fleas were imported by wild ducks which were migrating southward from Astrachan. The theory was examined and it has shown by laboratory experiments that the rat flea (*L. Cheopis*) will not take to ducks either wild or tame. It is probable that the plague infection remained dormant for a long period in this instance in Seistan.

We must refer our readers to the report itself for the interesting account of the great amount of research work done in the Laboratory—especially the study of complement deviation in case of syphilis and leprosy. A full account is given of the experiment on the treatment of snake bite by Potassium permanganate, a synopsis of which was given in these columns (*I.M.G.*, June 1910). The following may be quoted —

We may conclude from the above —

(1) That a dog bitten under natural conditions by a Russell's viper, cannot be saved by the local application of potassium permanganate however applied.

(2) That a dog similarly bitten by a cobra cannot be saved by local application of powdered potassium permanganate after free incision of the bitten place.

(3) That it may be saved however by the immediate injection of 10 c.c. of a 5 per cent solution of potassium permanganate, but this solution is so strong that gangrene of all the tissues of the foot is produced.

(4) That if this treatment be delayed for even two minutes a fatal result cannot be averted.

It may be argued that though the above result appears very unfavourable, yet it is possible that snakes do not inject such overpowering doses when men are bitten, as they are proportionately much larger and perhaps more able to shake off a snake attacking them. It was necessary therefore to find out what was the minimum lethal dose (M.L.D.) for dogs of the samples of venom in stock and to use one or more lethal doses for further experiments with potassium

permanganate. After experiment with dried powdered venom it was found that the M.L.D. of Daboa venom for dogs was 0.75 mg. per kilo of body weight.

In experiments *in vitro* it was found that the poisonous properties of Diboa venom are destroyed by contact for five minutes with half its weight of potassium permanganate in solution.

The same result was got with cobra venom.

It was then sought to discover whether the method would be successful *in vivo*. Accordingly dogs were given 10 M.L.D. subcutaneously and were at once injected through the same needle, left *in situ*, with half the weight of potassium permanganate in solution. Five dogs thus treated died within the usual period after the injection. One recovered. The recovery took place in the case of the dog which got the venom in concentrated solution, but whether this was the cause of the recovery is not known. Two further experiments with 10 M.L.D. of Daboa venom were performed with twice the weight of potassium permanganate in solution, but both dogs died in a few hours after injection.

From this it appears that four times the amount of potassium permanganate sufficient to destroy the venom *in vitro* is powerless to avert death when employed *in vivo*, when ten minimum lethal doses are injected.

Exactly the same results were obtained when cobra venom was experimented with, except when twice the weight of potassium permanganate was used, when one dog out of three recovered.

PLAQUE IN UNITED PROVINCES, 1910-11

We quote below some extracts from the report on plague administration in the United Provinces submitted to Government by Colonel Manifold, I.M.S., the Inspector General of Civil Hospitals.

The late Major Campbell Dykes, I.M.S., was Special Plague officer for the districts of Ghazipur, Azamgarh and Ballia from January 1911 to 12th May, on the 1st June, Capt. H. Ross, I.M.S., was appointed Chief Plague Officer and four I.M.S. officers were posted to plague duty. There were 42 travel dispensaries for treatment of plague, and it is probable that these dispensaries will soon obtain the confidence of the people.

The following table shows the total plague deaths each epidemic year since 1903 —

1903-4	131,440
1904-5	354,285
1905-6	49,840
1906-7	268,774
1907-8	22,385
1908-9	13,814
1909-10	141,377
1910-11	314,495

The highest mortality occurred in March 1911, during which month 94,739 deaths from plague occurred, the mortality during this month exceeding the total mortality from July 1910 to January 1911 by 30,025. It is worth noting that the mortality from July to October in the year under review was less than the mortality during the corresponding period of the previous year, although this year's epidemic was twice as severe as last. This may possibly be due to the fact that the severe epidemic which occurred all over the provinces from January to May 1910 killed off so many rats that they could not breed up to their normal numbers before October.

Another point of interest is that the two severe plague epidemics of 1909-10 and 1910-11 followed on good harvests, while the very mild epidemic of 1908-9 occurred during a famine year, it is a well known fact that the number of rats depends directly upon the quantity of food available and that they will, within a few months, breed up to the food supply, even when they have been reduced to small numbers. The rains in the early part of this year (1911) were considerably in excess of normal, which may account for the severity of the epidemic as it has been noted that the recurrence of plague epidemics bears some relation to the rainfall, severe epidemics usually following early and heavy winter rains. Early and heavy winter rains mean increased humidity of the air, and it is well known that the more humid the air the more fleas are found on the rat.

On the subject of Rat Destruction, the report states as follows —

161,772 rats were killed in the districts of these provinces, Shahjahanpur heading the list with 66,228, Bareilly 46,830, Muzaffarnagar 22,274, and Cawnpore 16,829.

Experiments carried out in the Punjab over a period of several years have shown that widespread rat destruction is quite impracticable as a general measure both on the grounds of the enormous expense required to provide the minimum percentage of rat traps which is effective in even temporarily reducing the rat infestation of towns and villages and the absolute impossibility of getting the people to carry on the

measure without constant careful supervision. What renders any attempt at general rat destruction a still more hopeless task is the impossibility of preventing the easy access of the rat to the stores of grain, and even although enormous numbers may be trapped it is found that the remaining animals speedily breed up again to their almost unlimited food supply.

In some districts the rat is looked on as the friend who gives the first signal to the householder of his danger, and this year in some districts many people refused to set traps as they said they would be getting rid of the friend who, by the sacrifice of his own life, gave timely warning of the advance of plague.

Another not uncommon impression is that traps introduce plague, this belief is due to the fact that human plague sometimes first made its appearance in a village shortly after an attempt had been made by the plague staff to avert its onset by trapping as soon as any unusual mortality was noticed.

In one instance where a taluk official had promised his aid to secure some rats for examination it was found that his wife had been so strongly imbued with the above idea that she had insisted upon the traps being kept outside the house for two days until they should have lost the plague infective powers she attributed to them. In the early cold weather on the first warning of plague judicious and carefully supervised trapping of a small area is of use in averting the onset of an epidemic, but desultory trapping such as that carried out in a number of places in these provinces during the year under review would be better discontinued if it involves any expense to Government.

Inoculation — The total number of inoculations performed during the year was 91,065 as against 76,120 in the previous year, and it is satisfactory to note that the number of deaths among those inoculated was only 83 as against 42 in the preceding year.

These figures have been based on the statements submitted by District Magistrates and Civil Surgeons. The latter received instructions to investigate personally the circumstances under which deaths occurred from plague in those inoculated.

The following remarks of the late Major Dykes are of great interest —

"I could not help observing however that the grounds of objection to inoculation have in a great measure changed, there is little or no panic, and still less fear of danger to health or vision, but there is what I cannot help thinking, an increasing feeling that the discomfort of a yearly dose of plague vaccine is too high a price to pay for the protection afforded, and the more widespread this sentiment and the less it is inspired by unreasonable fear and suspicion, the worse the augury for the extension of inoculation. Moreover, the better off classes appear to consider their danger much less than that of their poorer neighbours and when seriously alarmed seek safety in flight. There remains however a small proportion of the population quite persuaded of the value of inoculation and willing to submit to the operation year after year as long as it may be necessary and it is in the slow spread of this example that the chief hope lies of the extension of the practice and in this connection it may be suggested that the fixing of a small fee nominally to cover the cost of vaccine might have the effect, not of checking, but actually of popularising the measure."

"Although there are districts, such as Azamgarh, which will have nothing to do with it, yet inoculation may on the whole be said to be making headway, not very marked but yet appreciable. Its further advance can only be brought about by the most unremitting efforts, and even then only in the presence of an active epidemic will it ever be freely resorted to."

"There is reason to believe that in many districts the wild superstitious fears of the harm resulting from it are being allayed, but to believe that it will be, under existing conditions readily sought is being more hopeful than the circumstances warrant."

The attitude of the people to Evacuation is noted upon as follows —

"This is the measure which the villager himself is adopting as a means of escaping the disease, and if thoroughly carried out is a most efficacious measure and one on which much hope may be placed. The systematic camping out of the whole village population in the open or in chappais erected not far away is what should be aimed at. Those who do this are not likely to carry away any great store of grain out of their houses into their temporary shelters the rats do not follow them and the epidemic ceases at once. The danger arises in their returning to their houses before the rat epidemic has subsided or in visiting them to get at their possessions and fetch out grain. I am told by Mr. McNair, Collector of Faridkot, that this is one of the reasons why mortality continues higher amongst women even after evacuation as they more commonly visit the vacated houses than do the men for these purposes. It is

on record that during some plague experiments, an investigator who had gone into a plague infected godown to fetch out a cage of rats was examined on coming out when 26 fleas were found on him, most of them plague infected. Under these circumstances it can be understood how even return visits abolish much of the security afforded by evacuation.

"In many cases, particularly of towns, it is found that the people have a marked antipathy to evacuation."

Disinfection — This is commented upon as follows — "Disinfection is a measure which brings a certain comfort and assurance with it, but by allaying fear it may actually be causing more harm than good, as the false sense of security may prevent effective measures such as inoculation and evacuation being resorted to. Careful pulicid disinfection with kerosene emulsion when plague has been introduced by human agency is probably fairly effective, but once infection has arisen among the rat population of a house little can be effected. A so called disinfected house is liable to the following night to reinfection from the fleas of another dying rat."

"Disinfection of clothes, bedding and particularly of chappais by sunlight when evacuation of a village takes place is however a very essential measure and great importance should be attached to it, as it will undoubtedly prevent the conveyance of infection into the temporary glass dwellings."

THE JAIPUR MEDICAL REPORT, 1910

As usual this report is full of interesting matter. Lieutenant-Colonel P. D. Park, I M S (i etd.), Lieutenant Colonel W. H. A. Robinson, I M S, and Major J. Fisher, I M S, were the medical officers in charge.

The surgical portion of this report is always of interest. There were 512 cataract operations done, by Von Graefe's method, on 353 persons, 56 abdominal operations, 37 operations on the rectum, &c.

We quote the following extract on the operations for stone for which the Mayo Hospital, Jaipur, has ever been famous —

"Forty cases of Vesical stones were treated by litholapaxy with one death 4 days after operation. Death resulted due to cystic kidneys and the left kidney was found full with pus."

"Thirty four cases were amongst Hindus and 6 occurred in Mussalmans. Out of 40 cases 8 belonged to Jaipur city, 30 to Jaipur district, one belonged to Jhelam (Punjab), and 1 came from Makrana district, Jodhpur."

The different ages of the patients were as follows —

5 years and under	16
6 , to 10 years	11
11 , to 20 "	5
21 , to 30 "	4
31 , to 40 "	1
41 , to 50 "	1
51 , to 60 "	2

"Twenty six cases were in male children, 1 in female child. There were 12 adult males and 1 female."

"The durations of the symptoms varied from 4 months to 8 years."

"Crushing varied from 1 minute to 57 minutes."

"Washing varied from 1 minute to 40 minutes."

"The largest stone weighed 1,442 grains and was composed of Phosphates and Urates."

"Average time of crushing was 16.55 minutes and of washing 11.14 minutes."

"The longest time taken in crushing was in a male child who had a stone weighing 397 grains composed of Phosphates, and the longest time of washing was 40 minutes in a female aged 30 who had a stone weighing 1,452 grains composed of Phosphates and Urates."

"The average stay after operation was 57 days."

Composition of stones	No. of cases
Oxalates and Urates	3
Urates	4
Urates, Phosphates and Oxalates	9
Urates and Phosphates	6
Oxalates and Phosphates	12
Phosphates	2
Uric acid	1
Yellow stone	1
Oxalites	1
Phosphates, Urates and Calcium Phosphates	1
Total	40

HOSPITALS, MADRAS

SURGEON GENERAL BANNERMAN, I M S, submits the annual report on the civil hospitals and dispensaries of the Madras Presidency. Surgeon General Browne retired on 1st April 1908 and Surgeon General Benson was in charge during most of the triennium.

Number of Institutions—The triennium opened with 13 State Public institutions, of which 2 were reserved for females (class B), 49 State Special maintained for Police (41), Criminals (1) and other Departments (7), 149 Local Fund of which 20 were class B institutions, 22 Private aided with 3 of class B, 26 Private non aided with 5 of class B, and 51 Railway dispensaries.

At the end of 1907 the accommodation provided in institutions open to the general public consisted of beds for 2,811 males and 2,263 females. These included reserves of 42 and 30 respectively at the Ophthalmic Hospital, of 255 and 141 respectively for lepers in Madras, Malabar and South Canara, together with the Madras Reserve of 100 for female syphilitic patients, 202 in the Maternity Hospitals, and 78 for Caste and Goshala Women. There are also 27 beds, for either sex in the contagious wards of the General Hospital and the provision for plague observation in special hospitals.

During the triennium there were added 4 female beds in the Ophthalmic Hospital, 45 beds for male lepers (South Canara), 18 beds in the Government Maternity Hospital, and 2 beds for Caste women. The number of unreserved beds at the end of 1910 was 2,592 for males and 1,808 for females, the variations among the former were comparatively trifling, while the conversion of the Salem Women and Children Dispensary into a hospital with 14 beds, and the addition of 20 beds at the Madras American Mission Hospital for Women and Children deserve special mention.

Diseases treated—During 1908–10 the registration of disease among those treated has been elaborated by the introduction of (1) cases of normal and abnormal labour in the disease statement, (2) separate disease statements for in and outpatients among institutions other than those of class V and (3) separate columns to register the mortality under each disease heading among all patients treated in class V, and among in patients in other classes of institutions.

A further improvement was secured by the order to include in the appropriate columns of the in patient return the out door labour cases with the mortality noted among them. There is therefore now a complete record of all deaths within the districts which the Civil Medical Department may be held to be professionally cognisant of.

General diseases are in the new statements differentiated into 'infective' and 'other general' diseases, but for comparison with previous statistics the group name is retained.

Excluding labour cases the clientele during the triennium included those seeking relief for general diseases 4,795, 324 for local diseases 12,317, 581, for injuries 1,091, 262, and for poisons 32, 322. These items formed respectively 26, 30, 67, 54, 5, 98 and 0, 18 per cent of their total. In the previous triennium the proportions noted were 23, 36, 65, 85, 5, 19 and 0, 17 respectively. The variations in the disease proportions is due (1) to the fact that prior to the introduction of a separate column in 1908 for 'Labour' the abnormal cases of that heading were included under general diseases and (2) to the subsequent instructions from this office to omit cases of 'no appreciable' disease, etc., which were similarly included.

In 1908 and 1909 labour cases numbered 8,232 and 10,160 respectively which had come under medical treatment, together with 32,640 and 32,286 respectively which were credited to the midwives employed by local bodies. The system of registration clearly permitted of some cases being duplicated by separate entry in the hospital and the midwife's registers. In 1910 the District Medical officers were instructed to include in the hospital registers and, consequently, in the hospital returns every case of labour, whether conducted by the Medical staff or the midwives and to return the out door cases among them as 'represented by friends'. The consequence of the order was a fall of 5,400 in the number returned for the Presidency, but that this fall has had no bearing on the outturn of obstetric surgery will be shown further on.

The notes on Surgical Operations are always of interest. Surgeon General Bannerman writes as follows—

The institutions in classes I, III and IV only supply tabulated statistics of operations. During the triennium under report 621,869 operations were performed on 616,439 patients as contrasted with 536,137 on 531,100 patients during 1905–1907. The proportion of cases operated on was 3, 63 per cent of all those who were under treatment. 10, 36 among injured persons and 7, 18 of the labour cases, it varies but slightly from the average record.

Operations may be conveniently considered under three heads (1) those necessitated by injuries, (2) those performed for disease or deformity, and (3) obstetric operations. Among the first and second groups a large number of small value occur frequently and must be excluded in considering the comparative mortality in the last group about one fourth intended to facilitate the commencement or completion of labour, are safe and seldom fatal.

Injuries gave rise to 106,344 operations. Of these 66,829 were undertaken for the removal of foreign bodies, and

11,961 for repair of wounds in various parts of the body, the deaths herein numbered 1 and 32 respectively. The most important among the rest were amputations, 1,206, setting of fractures, 13,371, reduction of dislocations 5,123, and haematocele, 261. The mortality was 0,13 per cent for the group, but in the above selections amounted to 3,72, 0,42 0,06 and 1,14 respectively. The number treated under each item of the group was higher than that of the previous triennium, the fall in mortality was general, and under amputations was 1,96 per cent.

Operations undertaken for disease or deformity numbered 507,054. The most frequent were those performed for abscesses (195,569), linear scarification of the skin for boils, carbuncles, sinuses, etc., 46,772, and dental operations—mainly extraction of teeth—(171,433). The increase under each of these items yielded 75 per cent on the group total, and the mortality among them was less than 1 per cent. Those of surgical interest in this group included—

(1) Extraction of lens, 3,675. The number is less by 180 than the previous record, the reduction being due to the change of Superintendent at the Government Ophthalmic Hospital, and the smaller number of cases returned from the musafiss, 96,68 per cent were cured and relieved.

(2) Amputations, 784 or 87 less than before. The death rate was 5,75 per cent or 2,34 higher, the increase occurred almost entirely among amputations of the lower extremities.

(3) Operations on the skull spine and nerve centres, 90 or one tenth as much again as the last record. These resulted in 70 per cent of successful cases and 22,58 of deaths.

(4) Abdominal sections—294 for diseases of the abdomen, and 393 for diseases of the female generative organs. This is an advance of 50 per cent on the previous triennium. The operation was attempted more frequently in musafiss hospitals, and, in view of the comparatively inadequate surgical equipment and nursing facilities of those hospitals, the slight increase of death rate (5,81 per cent) in the first set is excusable. The second series, mostly performed in the special City hospitals yielded satisfactory results, and the mortality was 6,48 per cent less than the previous record.

(5) Operations for stone in the bladder, 181. This was less frequently performed but with decidedly better results.

LUNATIC ASYLUMS

MADRAS

There are three asylums in the Madras Presidency, at Madras, Calicut and Vizagapatam. At the end of the year there were 531 male and 193 female inmates or a total of 724 insane persons including 160 criminal lunatics, in the whole Presidency with a population of—

Surgeon General Benson in his report, dated 10th April 1911 (but only recently come to us) states that 'the segregation of inmates is gaining public appreciation and gradually in relation to women but up to now the majority of females brought to the asylums are confined merely to wait death.'

It is proposed to extend the Madras Asylum but the necessary land has not been acquired. At Vizagapatam females hospital and a block of 6 single observation rooms have been added. At Calicut a female hospital was completed.

The general health was satisfactory on the whole but 12 died in a cholera outbreak out of 22 cases in the Madras Asylum. The infection was traced to a particular well in which the cholera germs were found (from whence derived it is not stated).

Correspondence

RE FOOD AND DRUGS ACT

To the Editor of 'THE INDIAN MEDICAL GAZETTE'

SIR.—In your issue of September you have a sound leader upon the above subject and it is to be hoped that as the leading Medical Journal has now moved in the matter supporting the lay press, the Government of India will see its way towards placing such a Bill on the agenda for forth coming legislation. I will be as brief as possible, but I hope that my remarks may be of some utility in pointing out the pressing necessity for some protection to the public, as well as to indigenous manufacturers in the form of a Pure Drugs Act, and at the same time may suggest some one or two matters which ought to be done for manufacturers in this country.

In England the pharmacist who dispenses for the physician knows generally at a glance the quality of the drug he is using. It would be suicidal for a manufacturing house to try and palm off deteriorated physiologically inactive preparations upon him. Were such a thing attempted, such a house

would soon lose its entire custom and repute. I am at present referring to galenicals liable to rapidly lose their physiological activity, and to those drugs which may have seriously deteriorated through bad packing, drying and so forth, or which may have become physiologically inactive for reasons such as age, bad storage etc. There is no official test for such preparations and a preparation might easily be B.P. in point of alcoholic strength extractive, etc. while entirely useless for clinical administration. Into this category fall such drugs as Eigo^t Squill, Digitalis and so forth. Only a few days ago I happened to see two notifications of price alteration from the same London firm to two chemists in Calcutta—one a European firm the other a native firm. To the former under date August 11th Extract Eigo^t Liq B.P. was notified at 6s 6d per lb. To the latter, dated August 18th the same preparation was notified at 2s 10d c.i.f. Calcutta. Now there has been no appreciable fall in the high price of Eigo^t which has been between 4s 3d to 5s 6d per lb for the last year or so. One pound of Liquid Extract of Eigo^t contains one pound of Eigo^t and one cannot imagine a business house supplying the Liquid Extract at a price far below the value of the crude drug contained in it. Is it possible therefore for "Ext. Eigo^t Liq. B.P." to be manufactured, shipped bottled and landed c.i.f. Calcutta for 2s 10d? Apparently so. This brings out the fact that any Food and Drugs Act which may be placed on the statute book should have a clause in it embodying some standard for physiological activity, and more especially so as the heat of the country during the greater part of the year would render an only partially active preparation of this type absolutely inert within two or three months of its arrival.

Manufacturers in India, too require facilities in this direction, and some arrangement should be made by which they can have, for a nominal figure their various batches of such preparations tested in a government laboratory or other suitable institution. Such a facility would do much to help and encourage the Indian drug industry since it would tend to place the confidence of the medical profession with individually made galenicals.

Another matter is perhaps worth mentioning. In the London Drug sales reports, one continually sees quantities of damaged materials being put up for auction and sold for a mere song. They ought to be destroyed. Now where do these semi-damaged, worm-eaten adulterated false drugs go to? To veterinary people? In put perhaps e.g. Gentian, Columba, etc. To Manufacturers of alkaloids Glucosides, oils, etc. In put again perhaps, e.g., Camphor, Willow Bark, Belladonna Root, etc., but not very often as I know. Still, what happens to all the damaged Cascara, H. S. Scamans, Eigo^t Squill, Ipecacuanha, Sarsaparilla, Senega and so forth, quantities of which we readily purchase when advertised? They are certainly used and are probably made into powders, liniments, tinctures and other galenicals and shipped East.

For Indian manufacturers to get much "Bazaar" trade is well nigh impossible in spite of all the advantages they could offer for genuine articles. "London made" is a great name but a lower price occasionally takes. However to sell at a lower price, frequently means adopting questionable methods of manufacture and I will illustrate this with a case in point. Being anxious to know how a London firm were able to place "Ext. Surze Jam Co solid" on the Indian market at a rate far below the cost of the genuine article I made enquiries from a most reliable source. The formula I give below and it is interesting is showing concoctions which are "London made".

Sarsaparilla (Lima)	130 lbs
Sarsaparilla (Ver. Cruz)	140 lbs
Gum-cam Chips	40 lbs
Mezereon Bark	15 lbs
Block Juice	18 lbs
Glycerine	2 galls 5 pints
Liquid Glucose	10 galls 4 pints

Product about 155 lbs

N.B.—Glycerine being high in price at present is replaced by Glucose."

From this it will be seen that Liquid Glucose is the chief ingredient and that there can only be some ten per cent Sarsaparilla Extract in the preparation, and that not real Jamaica. No wonder Rs. 3 per pound is a good figure with plenty of profit left in it.

Sweet Spirit of Nitre is not prepared always by the B.P. process. To save alcohol, it can be made by passing nitrous (?) acid gas into ice cold alcohol this being foamed (?) with some praldehyde at the end of the process. The "Tinctura Bazu" of one London house of exporters to this

country is well known to those who have had practical experience in London houses. Such a preparation is either B.P. '83 '93, etc. in fact whatever is cheapest. I hear, but I can only say it for what it is worth, that a huge part of the market consists of about half of Ext. Glycerinized Liquid, still I can say from my own personal experience and from

the contact I have had with chemists employed in London Manufacturing houses that anything will do for India, the East and the dog. Again what about powders and pills? How many exporting houses to the East make them? I have no doubt that certain number do make some, but certainly all do not and these buy in the cheapest market. So long as the appearance is alright, there is no further question. I could give many instances which I have personally come across but which would be dangerous to commit to writing of questionable practices one can hardly believe that such low down practices are general but, at any rate, when they do occur, they should be liable to excessively heavy penalties.

It has been suggested that "imported" goods should be tested at the place of import. This would be unfair alike to Indian manufacturers and to English exporters as it would in one way penalise the latter while letting the former scot-free. Yet it would harm the former since physicians would have greater confidence upon imported drugs and galenicals in the Indian market as these had been liable to undergo a rigid examination while those of local makers who had been allowed to make "to the best of their ability," yet upon whom no such restrictions were placed might be considered untrustworthy. There should not be much doubt, however, that, with the exception of preparations whose alkaloidal strength can be readily and accurately determined, there ought to be some ready and cheap means in this country for testing physiologically all preparations which are liable to deteriorate in that direction and some arrangement should be made to give Indian manufacturers an equal opportunity of having their galenicals tested physiologically as easily as that prevailing in Great Britain.

One further point in conclusion, let local representatives of "London made" goods say what they choose adulteration in England seems pretty rampant, even in spite of a Food and Drugs Act. A study of the various district analysis reports proves this of those recently to hand the following is a fair sample—

Name of District	Percentages of products adulterated on samples analysed
Bermondsey	96
Hall	91 0
Kent County	26
South York	63
Marylebone	nil

Now, if adulteration occurs to this extent in England, what is it likely to be for goods exported to the "Jewel of the Empire"?

I remain,
Yours faithfully,
A NORMAN HIRST,
Bachelor of Science of London University

PROMOTION EXAMINATION FOR SUB ASSISTANT SURGEONS

To the Editors of "THE INDIAN MEDICAL GAZETTE"

SIR—I beg to request you to kindly allot some space in the column of your Indian Medical Gazette to the following which I believe concerns the interests of all my fellow Sub Assistant Surgeons, and to which I request you to draw the kind attention of our benign Government through the medium of your Gazette.

It can be admitted on all hands that we, the Sub Assistant Surgeons, is a class, we deeply grateful to the Government for the kind consideration paid from time to time to the grievances of our hard working class, and feeling encouraged at the notion we beg once more to crave the indulgence of the Government to consider the following—

It is a hard fact that under the new rules promulgated by the new scheme we are required to pass three grade examinations in place of two, as hitherto been in force, and not only the burden thus placed upon us is unbearable and disheartening, but we are really put to great disadvantage, inconvenience and trouble. The enforcement of a third examination to say the least of it is no less than an additional stumbling block in the way of meagre and hardly earned promotions of our class that has several times been admitted both by the Government and the public to be the essential factor—really the backbone of the Indian Medical Department. To the Sub Assistant Surgeons employed under the old system the institution of a third examination is, as a matter of fact, a real calamity a measure not only disheartening, but actually disastrous to their already marred prospects, as they had in view when they entered the department only two grade examination to pass through, to reach the zenith of their promotions.

I therefore appeal to the Indian Medical Gazette to move on behalf of my professional brethren for the total abolition

of this third newly forced examination, and if this prayer be not acceptable (which I don't understand why it should not) let us in the last degree pray to the Government that the new rules be applicable to those only who are newly employed and not to those who have already been in service for a considerable time, so that those who have already passed the two grade examinations be exempted from this newly introduced third examination, and be classed as under the rules hitherto in force, as First Grades.

I am fully confident that our kind and just Government will pay due consideration to our case and acknowledge the reasonableness of this request, if the Medical Clubs as a body moves the matter on our behalf, and we all in support to it unanimously submit our applications to the same effect to our provincial heads.

Yours very truly,

H KARIM AHMAD,
Sub Assistant Surgeon, Tijara,
Alwar State

Dated 10th October 1911

[Surely the 3rd examination complained of will be useful to the public in that it will promote good men and weed out the idle?—ED., I M G.]

DARK GROUND ILLUMINATION AND ULTRA MICROSCOPIC VISION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In view of the great number and variety of dark ground illuminators and appliances for ultra microscopic observation which have come into existence it is a matter for regret that makers have not always been circumspect in the choice of descriptive terms and it is not improbable that in many cases this may have encouraged a pretty widely spread tendency on the part of users of the microscope to confound enhanced visibility with increased resolving power with the result that a considerable amount of confusion has arisen respecting the fundamental aspect of the two modes of observation.

Neither the method of dark ground illumination nor the so called ultra microscope can in any true sense of the term be regarded as a means of enhancing the resolving power of the microscope. In accordance with the undulatory theory of light this can only be accomplished by increasing the aperture of the optical system or by diminishing the wavelength of the light. In their fundamental physical aspects the method of dark ground illumination and the observation with the ultra microscope are identical, and both serve to enhance the visibility of an object.

At the bottom of the secret which underlies these methods is the simple and familiar one that brightly illuminated objects can be seen more distinctly on a dark background than on one which is itself bright. Two things happen when a bright object is seen on a black ground objects which were visible on a bright ground become much more distinct, and other particles which could not be seen before will come into view.

When this principle is applied to the microscope it is found that in the field furnished by the method of dark ground illumination details can be observed especially in preparations containing micro organisms, which cannot be recognised under ordinary circumstances, though dimensionally they are well within the resolving power of the microscope. In addition, particles become so far visible that their presence can be perceived, and this, despite the fact that their dimensions may be considerably smaller than the wavelength by which they are seen and accordingly beyond the resolving power of the microscope.

So long as the objects are seen in a dark field exhibit structural details and well defined contours we are dealing with simple dark ground illumination. When on the other hand, the field is seen to contain particles in which there is not a visible trace of detail and which accordingly present the appearance of bright point like discs, generally surrounded by bright and dark rings, the case is one of ultra microscopic observation and the particles whose presence is thus perceived are ultra microscopic.

It will thus be seen that the difference lies solely in the manner of observation and not in the nature of the apparatus. On the other hand ultra microscopic observation implies dark ground illumination whilst it is not every form of dark ground illumination that constitutes an ultra microscope. For this reason it is most desirable that the various appliances should bear appellations from which it is at once apparent that they are primarily intended for dark ground illumination pure and simple or for ultra microscopy as the case may be, i.e. dark ground illuminators should be named so as to distinguish them from ultra microscopes.

It should however, not be overlooked that in practice it happens often enough that a dark ground illuminator, i.e., a condenser primarily devised for ordinary microscopic observation in a dark field, is available for ultra microscopic observation, indeed in many cases both kinds of observation are made concurrently. The examination of a preparation of saliva furnishes an instance of this. With our concentric condenser (after Dr Jentzsch of our Scientific Department) one can see in this medium a few organisms moving across the field in snake like fashion and others of a rod like shape, whilst in addition to these there are to be seen bright discs surrounded by one or several bright rings and executing quivering movements. The latter come into view by an ultra microscope process whilst the others are seen under simple dark ground illumination, though sometimes their transverse dimensions are of the ultra microscopic order.

It is to be hoped that in future, makers as well as users of these optical instruments will endeavour to prevent a continuation of the misunderstanding at present existing, and therefore employ the correct term, especially when referring to dark ground illumination of micro organisms.

I am Sir,

Yours faithfully,

E LEITZ

9, Oxford St
LONDON, W

THERAPEUTIC NOTICES

We quote from the Journal of the Austrian Chemists Association, No 29, 1911 page 312, as follows—

"**DIURETIN KAOLL**—It is probable that no other preparation has found so many 'makers' as this and hardly a month passes wherein some 'cheaper' substitute does not appear often associated with the name of quite unknown firms. On enquiring more narrowly into the matter, an explanation is forthcoming for the great differences in price which exist between individual products all said to satisfy the same pharmaceutical conditions. The task of fighting fictitious competitors of this kind is of course, a difficult one. A striking illustration is that reported by J Lorenzen in the Berlin Pharmaceutical Journal No 43, 1911, in which examination of a sodium silicate compound of theobromine actually on the market and listed as being 'chemically identical with Diuretin,' revealed the fact that it contained 30 per cent less of theobromine than Diuretin. Since preparations of this kind find currency in this country also, and we are not of course confined to this one preparation, we have in the preamble of the report drawn attention to the fact that such inferior products exist, the use of which may readily lead to misunderstanding and even grave inconvenience."

Messrs Mellin & Co send us a copy of the Progress book, an illustrated register of the development of a child from birth to 21 years compiled by Dr J J Pilley and published by Simpkin Marshall & Co. It is an elegantly got up little book and of great use. We commend it to parents.

The judges appointed to examine and report on the exhibits at the Festival of Empire have now announced their awards. Messrs Newton Chambers & Co, Ltd on Thorncleif, near Sheffield have secured a Grand Prix for their IZAL disinfectant preparations thus adding one more to the remarkable series of highest possible awards obtained by them at international exhibitions at home and abroad.

Apology of the pure drug question we clip the following from a Calcutta paper—

"IMPORTANT SEIZURES BY EXCISE OFFICERS"

M L C, pleader of Hughli, and his brother, P L C, employed in the Commercial Intelligence Department were charged by Mr Wilson, Chief Superintendent Excise Department, with importing medical tinctures containing a large percentage of spirits from Chander Nagore without payment of duty. Mr Wilson on receipt of information from time to time in connection with the importation of these tinctures, accompanied by certain members of his Department on the 5th September last proceeded to premises No 16, Old China Bazaar Lane, at 5 P.M. and found the two accused seated discussing the contents of some cases of tinctures with two employees of the firm of Messrs B K P & Co. All the bottles of the tinctures bore the label of the 'London Medical Agency' which it is alleged is the label of the Indian Pharmacy of Chander Nagore. There were three cases of bottles of tinctures which were seized and the two accused arrested. No 16, China Bazaar Lane is said to be the godown of B K Paul and Co prior to his arrest M L, it is alleged stated to Mr Wilson by way of explanation that the business in no way belonged to him but to some minors for whom he was managing it.

The case which is hotly contested was adjourned.

Among the 'Wellcome' serums and vaccines, which formed an important section of the exhibit at the Medical Exhibition was to be noted the new 'Wellcome' Diphtheria Antitoxin. In this preparation it has been found possible to diminish considerably the bulk of the dose a great desideratum in view of the large doses required in some cases. The concentration has been carried out by a method of salt precipitation and fractionation and the final product contains 1,000 antitoxic units in 1 c.c. or less of fluid.

One of the most characteristic features of the products of this firm is condensation, which was well exemplified by the 'Tabloid' Hypodermic cases shown. One of these, perfectly finished in nickel plated metal, is very nearly the size and shape of a mussel shell, yet it contains no less than five tubes of 'Tabloid' Hypodermic products, an All Glass Syringe with detachable finger grip, two regular needles and one exploring needle. Such a "tou de force" in the art of compression is of considerable utility to the general practitioner who is enabled in this way, to carry quite an efficient little armamentarium of medicines for emergency literally in his waistcoat pocket.

Service Notes

THE BLOCK IN PROMOTION

The following note will be read with interest —

The block in the Bengal establishment, regards advancement under Article 7 of the Royal Warrant to the higher grade of Lieutenant Colonel has never been more marked than it is at present, and it is unlikely that there will be any material change in the condition of affairs until the disappearance of the three Presidency establishments and their merging into a General List with effect from the batch of officers whose commissions are dated 28th January 1897. From that batch onwards promotions will be made on a common list irrespective of the civil areas in which officers may be eligible for employment.

Comparing the dates of promotion of the existing colonels of the three establishments we find their lengths of service were as follows —

BENGAL

1	29 years, 11 months, 25 days
2	31 " 6 " 1 day
3	24 " 2 " 3 days *
4	31 " 5 months
5	22 " 11 " 29 days *
6	30 " 7 " 16 "
7	31 " 9 " 12 "
8	29 " 3 months
9	27 " 7 "

MADRAS

1	29 years, 10 months
2	30 " 6 " 25 days
3	29 " 7 months
4	29 " 8 " 7 "

BOMBAY

1	29 years, 14 days
2	27 " 8 months, 29 "
3	26 " 9 " 13 "

Excluding Nos 3 and 5 on the Bengal List, for the reasons noted against them, the average length of service for the three establishments, based on the existing incumbents, is as follows —

Bengal	30 years, 2 months, 22 days
Madras	29 " 11 months
Bombay	27 " 10 " 8 "

In regard to the rank of Colonels, then, there is not much difference between Bengal and Madras, but a marked advantage, at present, on the Bombay side.

Comparing advanced Lieutenant Colonel the length of service of the last six officers of each establishment are as follows —

BENGAL

1	24 years, 8 months, 6 days
2	24 " 9 months
3	24 " 11 " 28 "
4	25 " 7 "
5	25 " 2 " 21 "
6	25 " 3 " 5 "

Average of above 24 years 11 months, 27 days

* These two promotions were quite exceptional ones as the officers concerned had obtained substantive promotion in the lower ranks out of their ordinary turn.

MADRAS

1	23 years, 6 months
2	21 " 16 days
3	21 " 1 month
4	21 " 2 months, 7 "
5	21 " 3 " 9 "
6	21 " 3 " 26 "

Average of above 21 years, 6 months, 25 days

BOMBAY

1	23 years, 2 months, 8 days
2	22 " 9 months
3	23 " 6 "
4	23 " 17 "
5	23 " 15 "
6	23 " 25 "

Average of above 23 years, 2 months, 12 days

Roughly speaking then, advancement is running at 25 years in Bengal, 21½ years in Madras and 23½ in Bombay. As compared with the first six officers now on the advanced list there is some improvement in Bengal, when the corresponding figure was 26½ years, similarly in Bombay the average has fallen from 24½ at which it stood, but the increased rapidity of advancement in the Madras establishment is far more marked, as the length of service has fallen during the last two years from 25½ to 21½ years, and there is reason to believe that the latter figure will hold good for some time.

It is impossible to give an accurate forecast of the vacancies during the coming year, in the near future one officer on the Bengal list will be superannuated, another must retire by the 1st March on account of having been granted a £100 pension, and a third will be promoted to Colonel on 24th March. The only other certain vacancy is due to a superannuation on the Madras list at the end of January.

LIEUTENANT COLONEL A. ALCOCK, I.M.S. (ret'd), C.I.E., F.R.S., is publishing a very useful book on *Entomology for Medical Officers* (price 10s 6d pp 700). It will be divided into two parts, and consists of 22 chapters and 125 illustrations, mostly original. It will be specially strong on 'disease carriers,' mosquitoes, fleas, bugs, ticks, lice. The book will be invaluable to medical men in the tropics and Colonel Alcock's reputation is enough to assure us of a good book.

The following useful note on I.M.S. uniform is re-published —

"In continuation of this office memorandum No 8851 of 2nd October 1911, I am directed to inform you that Indian Medical Service officers in permanent civil employ on all State and other occasions when military officers wear uniform may, at their option, wear military uniform or plain clothes. In the event of an officer desiring to wear uniform, the 'frock' detailed in the memorandum above mentioned is the correct garment when the order of dress is undress."

2. Officers in temporary civil employ will wear military uniform.

Undress uniform Undress Pealed Cap—New Pattern
Copy of telegram dated 21st Nov 1911, "10103 Under orders from Quartermaster General it has been decided that all Indian Medical Service Officers wearing undress frock shall wear full dress pouch belt and full dress sword slings (under the frock), also full dress sword knot and white gloves."

Frock — Blue serge, tartan or angola, according to climate, full in the chest with black lining in front, collar and cuffs of the same material as the garment, collar stand up, cut square in front, and fastened with 2 hooks and eyes. Shoulder straps of black velvet with small departmental buttons at the top. Side slits, 5 small departmental buttons down the front. A patch pocket, with box pleat 6½ inches wide and 9 inches deep, with shaped flap and small button on each breast. Top edge of pocket flap to be in line with centre of second button. Two similar pockets below, but without pleat and button. Cuffs pointed 5 inches deep in front and 3 inches behind, with an opening at the back extending the depth of the cuff fastened with 2 small departmental buttons. Two inside pockets in the lining of the skirt in front, fastened with small buttons.

(No other kind of frock or frock coat is authorized for Colonels of the Indian Medical Service.)

No 8851, dated Simla, the 2nd October 1911.

Memo by—Major B. G. Seton, V.H.S., I.M.S., Secretary to the Director General, Indian Medical Service.

Forwarded to the Inspector General of Civil Hospitals, Bengal for information, with the intimation that the undress coat referred to is for all ranks of the Indian Medical Service.

THE under mentioned officers are placed on special duty, with the suite of His Majesty the King Emperor during the Royal visit, with effect from the dates noted against each

1 Lieutenant Colonel R. Bird, C.I.F., I.M.S., Professor of Surgery, Medical College, Calcutta, and ex officio Surgeon to the College Hospital 27th November 1911

2 Raj Hua Lal Basu Bahadur, Senior Demonstrator of Anatomy Medical College, Calcutta 1st November 1911

Major E. Owen Thurston, F.R.C.S. will act as Professor of Surgery for Lieutenant Colonel Bird, C.I.F.

As we go to press we regret to learn of the death of Colonel W. P. Warburton, I.M.S. (ret'd), formerly medical officer, Patiala State, P. M. O. Assam and Inspector General of Civil Hospitals U. P. Colonel Warburton only retired from the post of Superintendent of the Royal Infirmary, Edinburgh, a few months ago

LIEUTENANT COL. CHARLES NORMAN BENSLEY, I.M.S., Bengal, has been permitted by the Most Hon'ble the Secretary of State for India to retire from the service, subject to His Majesty's approval, with effect from the 12th November 1911

He entered the service on 30th September 1886 and served chiefly in military employment. He left India on leave on 12th March 1910

THE services of Captain C. C. C. Shaw, M.D., I.M.S., are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces

CAPTAIN J. CUNNINGHAM, M.D., I.M.S., is confirmed in the Bacteriological Department, with effect from the 1st September 1911

MAJOR J. H. HUGO, D.S.O., I.M.S. (Bengal) an Agency Surgeon of the 2nd class, was granted privilege leave for the period from the 7th August to the 7th September, 1911, both days inclusive

CAPTAIN T. CRAWFORD BOYD, I.M.S., Officiating Medical Officer, 5th Light Infantry, was appointed to hold charge of the current duties of the office of Agency Surgeon in Bundelkhand, in addition to his own duties, for the period from the 7th August to the 7th September, 1911, both days inclusive

CAPTAIN J. W. MCCOY, I.M.S., on return from leave is posted to Dinajpur as Civil Surgeon

CAPTAIN J. F. JAMES, I.M.S., is posted as Civil Surgeon to Dhubri

MR R. A. BOERMAT is posted to Noakhali as Civil Surgeon

MR G. C. MUKERJEE is reappointed Civil Surgeon of Bogra

BRIGADE SURGEON SIR HENRY JAMES BLAINE, K.C.V.O., Bombay Medical Service, retired, died in Paris on 30th September 1911 aged 80. He was born in London in September 1831, educated at Matpolar University, where he took the degrees of M.A., and M.D., also taking the M.R.C.S. in 1859 and entered the I.M.S. as Assistant Surgeon on 10th February 1859. He became Surgeon on 10th February 1871, Surgeon Major on 1st July 1873, and Brigade Surgeon on 25th April 1886, retiring on 2nd April 1887. Before entering the I.M.S. he had served in the Crimea. In the China War of 1860-62 he served with the Jagor Corps. In 1864 he accompanied Mr Rassam, the special Envoy sent to the Court of King Theodore of Abyssinia to try to arrange for the release of the European captives there. Rassam and Blaine were themselves made prisoners, and kept in chains for about two years. On their release they joined the force sent from India in 1868, and with that force Blaine was present at the storm and capture of Magdala, receiving the medal, also the thanks of Government, and £2,000 compensation. After his return to India he was appointed Senior Surgeon and Professor of Surgery in the Giant Medical College, Bombay. In 1882 he became F.R.C.P., London. After his retirement Blaine settled at Cannes, and practised there as a consulting physician. He was given the K.C.V.O. on 23rd July 1901. He was the author of "The Story of the Captives," a Narrative of the events of Mr. Rassam's Mission to Abyssinia," London, Longmans, 1869, "a Narrative of Captivity in Abyssinia, with some account of the late Emperor Theodore, his country and people," London, Smith Elder, 1868 (an enlarged edition of the first work) and of treatises in "Animals Vaccination," and "How to Avoid and Treat Cholera."

BRIGADE SURGEON GEORGE GRANT, Bengal Medical Service, retired, died at Beckley, Kent, on 2nd October 1911. He was born on 6th August 1834, educated at King's College,

Aberdeen, where he took the degree of M.D., in 1858, obtaining the diploma of L.R.C.S. Ed. in the same year, and entered the I.M.S. as Assistant Surgeon on 10th February 1859. He became Surgeon on 10th February 1871, Surgeon Major on 1st July 1873, and retired, with an honorary step, on 30th October 1881; most of his service was spent in civil employ in the N.W.P. now the U.P., in the jail and sanitary departments. The Army List assigns him no war service.

SURGEON LIEUTENANT COLONEL KAIL PADA GUPTA, Bengal Medical Service, retired, died on the 28th August 1911. He was born on 23rd June 1843, educated at the Medical College, Calcutta, where he took the degrees of M.A. in 1866 and M.B. in 1868, both with Honours, and subsequently at Edinburgh University. He took the diplomas of L.R.C.P. and L.R.C.S. Ed. in 1868, F.R.C.S. Edinburgh in 1870 and S.S.C., Cambridge in 1884. Entering the I.M.S. as Assistant Surgeon on 1st April 1869, he became Surgeon on 1st July 1873, Surgeon Major on 1st April 1881, and Surgeon Lt. Colonel, when that titular rank was first given, in 1891. He retired on 27th June 1898. The Army List assigns him no war service, most of his service was passed in Bengal, first in the Sanitary Department, in which for many years he held the appointment of Deputy Sanitary Commissioner of the Presidency Circle, and afterwards as a Civil Surgeon, at Barrasal, Hughli, and other stations.

THE FIRST MEDICAL LORD MAYOR OF LONDON. On the 29th September Sir Thomas Crosby was elected Lord Mayor of London for the ensuing year, the first occasion on which a member of the medical profession has filled that exalted position. Sir Thomas was educated at St. Thomas Hospital, where he was House Surgeon and Demonstrator of Anatomy. He took the diplomas of M.R.C.S. and L.S.A. in 1852 F.R.C.S. England, in 1860, and the degree of M.D., St. Andrews in 1862. Until a few years ago he was in practice in the City of London, he was at one time President of the Hunterian Society, and has been for several years a member of the Senate of the University of London. In civil life he was elected Alderman in 1893, served as Sheriff in 1900-07, and on the election of Sir Vezey Strong as Lord Mayor last year became the Senior of the Alderman who had not yet passed the chain. He is an officer of the Legion of Honour of France, and has been decorated with the Orders of the Crown of Norway, the Dannebrog of Denmark, the St. Olaf of Norway, and the Rising Sun of Japan. The City Company to which Sir Thomas belongs is that of the Turners.

LIEUTENANT COLONEL G. F. W. EWANS, I.M.S., was granted one month's privilege leave from 11th September 1911

CAPTAIN M. CORRY, I.M.S., took over charge of Ludhiana District, on 7th Sept. 1911

LIEUTENANT COLONEL W. R. CLARKE, I.M.S., of the Medical College, Lahore, got privilege leave for one month from 22nd August 1911

CAPTAIN H. E. KEPPELS, I.M.S., acted for Lieutenant Colonel Clarke at Lahore

LIEUTENANT COLONEL A. W. T. BUIST, I.M.S., was appointed Civil Surgeon, Ambala, from 18th September

THE services of Captain S. B. Mehta, I.M.S., Plague Medical Officer, Rohtak, are replaced at the disposal of the Government of India, Department of Education with effect from the date on which he may be relieved of his duties

THE services of Major E. L. Ward, I.M.S., Superintendent, Central Jail, Lahore, are placed temporarily at the disposal of the Coronation Dubai Committee with effect from the forenoon of the 11th September 1911

WITH reference to the notification dated of the Government of India Home Department, No. 1002, dated 27th September 1911, Major H. M. Mackenzie, M.B., I.M.S., assumed charge of the office of Deputy Sanitary Commissioner, Punjab, sub nomine at Murree, on the forenoon of the 6th September 1911, relieving Captain C. A. Gill, I.M.S., who is attached to the Mayo Hospital, Lahore, with effect from the forenoon of the 14th idem.

THE King has approved of the admission of the undermentioned gentlemen to the Indian Medical Service as Lieutenants on probation. Dated 29th July 1911 —

John Alexander Sinton, M.D.
Denis Fitzgerald Murphy, M.B.
Edward Randolph Armstrong, M.B.
Charles James Stocker, M.B.
Eric Edward Doyle

Cyril McDonald Plumptre
 Archibald Wallace Duncan
 Edward Austin Penny, M.B.
 George Bleekhorn Huland, M.B.
 Leon Francis Brudenbough, M.B.
 John Edward Scudmore
 Henry Lewis Barker, M.B.

THE commissions of the following Lieutenants on probation have been confirmed with effect from 28th January 1911

John Scott, M.B.
 Alister Ralph Spens Alexander, M.B.
 Kanwal Indajit Singh, M.B.
 Frederick William Hay, M.B.
 George Tite
 Sidney Milverton Hepworth, M.B.
 Harry Slater Cormack, M.B.
 George Selby Brock, M.B.
 Krishnun Gopinath Pandalai, M.B., M.S.
 John Frederick Henry Morgan
 Jyoti Lal Sen, M.B.
 Charles Albert Wood, M.B.

CAPTAIN W R J SCROGGIE, I.M.S., Officiating Civil Surgeon of Coorg, was granted privilege leave for one month, with effect from the 10th October 1911, or the subsequent date on which he availed himself of the leave

Assistant Surgeon E A Dives, of the Indian Subordinate Medical Department, was appointed to officiate as Civil Surgeon of Coorg during the absence on privilege leave of Captain W R J Scroggie, I.M.S., or until further orders

MAJOR H INNS, I.M.S., is now Civil Surgeon of Shillong and Captain N H Home, I.M.S., of Jalpaiguri, E.B.A.

ON return from special duty in the Burmese Central Jail 1st Class Military Assistant Surgeon R T Rodgers, Civil Surgeon is transferred to the Jail Department and appointed to be Superintendent, Central Jail, Raipur

CAPTAIN J M A MACMILLAN, M.B., F.R.C.S., I.W.S., Civil Surgeon, Hoshangabad, is appointed to the medical and sanitary charge of the Central Provinces Camps at the Delhi Durbar

Second grade Civil Assistant Surgeon Bipin Bihari Gupta, in charge of the Main Dispensary, Hoshangabad is appointed to officiate as Civil Surgeon, Hoshangabad, during the absence on deputation of Captain J M A Macmillan, M.B., F.R.C.S., I.M.S., at the Delhi Durbar, or until further orders

CAPTAIN W J FRASER, M.B., F.R.C.S.E., I.M.S., Officiating Civil Surgeon Chanda is deputed for a short course of training to the X Ray Institute, Delhi Dun

THIRD grade Civil Assistant Surgeon Stephen Ramchandra Rao, in charge of the Main Dispensary, Chanda, is appointed to officiate as Civil Surgeon, Chanda during the temporary absence on deputation of Captain W J Fraser, M.B., F.R.C.S.E., I.M.S., to Delhi Dun

THE services of Captain S B Mehta, F.R.C.S.E., I.M.S., are replaced at the disposal of His Excellency the Commander in Chief in India

CAPTAIN R E WRIGHT, M.B., I.M.S. is appointed to officiate in the Bacteriological Department and his services are placed temporarily at the disposal of the Government of Madras

CAPTAIN A G MCKENDRICK, M.B., I.M.S., is appointed to officiate as Statistical Officer to the Government of India in the Sanitary and Medical Departments, with effect from the 23rd October 1911 and until further orders, in place of Major S P James, I.M.S. on deputation to visit the Panama Canal Zone and attend the Far East Tropical Medical Association

THE services of Captain C C C Shaw, M.D., I.M.S., are placed temporarily at the disposal of the Chief Commissioner of the Central Provinces

COLONEL H THOMSON, I.W.S., has been acting as P.M.O. Bangalore Brigade

MAJOR R H ELLIOT, F.R.C.S. returned from 6 months' combined leave on 7th November

MAJOR G BIDIE, I.W.S., Durbar Physician, Travancore, due out from three months' leave on 6th November

MAJOR E M ELLINGTON, I.M.S., has been posted to Vizagapatam as District Medical Officer, vice Major Foulkes, I.M.S., on 1 year's combined leave

MAJOR C S HARRISON, I.M.S. has got one year's combined leave (m.c.) from 5th September

MAJOR T E WATSON, I.M.S., is due out 2nd December 1911

MAJOR D C KEMP, I.W.S., has gone on long leave from 5th September 1911

CAPTAIN A P G LORIMER, I.M.S., has been appointed Resident Medical Officer, Madras Medical College Hospital

LIEUTENANT COLONEL C F FEARNSIDE, I.M.S., has been appointed Superintendent Central Jail, Rajahmundry, and Captain J J Robb to be Superintendent, Central Jail, Vellore

CAPTAIN W P G WILLIAMS, I.M.S., acts as Superintendent Central Jail, Cannanore

MAJOR J W CORNWALL, I.M.S., has been granted long leave viz., 2 months and 9 days 1 year 9 months and 21 days, and 7 months, or a total of 2 years and 7 months out of India, so he is not due back till 10th April 1914

LIEUTENANT COLONEL ERNEST GERALD ROBERT WHITCOMBE, Indian Medical Service, Bombay, is permitted to retire from the service, subject to His Majesty's approval, with effect from the 27th October 1911

He entered the service on 31st January 1891, and has recently been medical officer of the 116th Mahattas

CAPTAIN W S NEALOR, M.B., I.M.S., was appointed to act as Civil Surgeon, Ahmednagar, in addition to his own duties, as a temporary measure, pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major J L Majooribanks, M.D., D.P.H., I.M.S., on relief, to act as Presidency Surgeon, Second District and Marine Surgeon and Superintendent, Lunatic Asylum, Colaba, and in medical charge, Elphinstone College, vice Major J H McDonald, M.B., C.M., I.M.S., pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —
 Major A W Tuke, F.R.C.S.I., D.P.H., I.M.S., to act as Professor of Midwifery and in charge Bai Motlibai and Sri D M Petit Hospitals during the absence on leave of Major S C Evans, M.B., M.Ch., (Edin.), I.M.S., or pending further orders

Major E F G Tucker, M.B., B.S., M.R.C.P. (London), I.M.S., to act as Presidency Surgeon, Third District, and in medical charge of the Common Prison, House of Correction and Byculla Schools in addition to his own duties temporarily, vice Major A W Tuke, I.M.S., pending further orders

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments —

Major J H McDonald, M.B., C.M., I.M.S., on relief, to be Civil Surgeon, Suiat, vice Major C C Morrison, F.R.C.S., (E), D.P.H., I.M.S., transferred

Captain J Smalley, M.B., I.M.S., to act as Civil Surgeon, Dhubri, vice Major G E Stewart, M.B., F.R.C.S. (E), I.M.S., transferred, pending further orders

MR S A POWELL, B.A., M.B., M.Ch., Police Surgeon, Bombay, is granted, with effect from the 4th September 1911, such privilege leave as was due to him on that date in combination with leave on medical certificate for such period as may bring the combined period of absence up to seven months

THE Governor in Council is pleased to appoint temporarily, pending further orders, Major E F G Tucker, M.B., B.S., M.R.C.P. (London), I.M.S., to act as Police Surgeon, Bombay, in addition to his own duties, vice Mr S A Powell, B.A., M.B., M.Ch., proceeded on leave

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major C C Morrison, F.R.C.S.E., D.P.H., I.M.S., to be Superintendent of Matheran, vice Major E F G. Tucker, M.B., B.S., M.R.C.P., I.M.S.

HIS Excellency the Governor of Bombay in Council is pleased to make the following appointments pending further orders —

Captain K G Gharpurey, I M S, on relief, to act as Civil Surgeon, Larkana

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major E C G Maddock, M B, B Ch (Edin), D P II (Cantab), I M S, on return to duty, to be Civil Surgeon, Ahmednagar

HIS Excellency the Governor of Bombay in Council is pleased to appoint Major A Hooton, I M S, on return to duty to act as Civil Surgeon Poona, with attached duties, vice Lieutenant Colonel J B Smith, M B, M Ch (R U I), D P II (Cantab), I M S, proceeding on leave, pending further orders

LIEUTENANT COLONEL W R EDWARDS, C M G, Indian Medical Service (Bengal), an Officiating Agency Surgeon of the 1st class, is granted privilege leave for three months combined with furlough for nine months, under Articles 233 and 208 (b) of the Civil Service Regulations, with effect from the 9th October 1911

LIEUTENANT COLONEL T W IRVINE Indian Medical Service (Bombay), as Agency Surgeon of the 2nd class, is appointed to officiate as an Agency Surgeon of the 1st class and Chief Medical Officer in the North West Frontier Province, with effect from the 9th October 1911

CAPTAIN H O KRAFTS, I M S, made over charge of the duties of Superintendent of the Jullundur District Jail to Major E S Peck, I M S, on the forenoon of the 10th October 1911

A NOTIFICATION in the *Bombay Gazette* gives the following of Medical Officers, the right of private office at Government House, Bombay —The Surgeon General, the P M O VI Division the Inspector General of Prisons and the Sanitary Commissioner

MAJOR A W TURE, I M S, and Major E F Gordon Tucker, I M S, respectively, delivered over and received medical charge of His Majesty's House of Correction and His Majesty's Common Prison on the 11th October 1911 after office hours

HIS Excellency the Governor in Council is pleased to appoint Captain J L Lanham, M B, B Ch (R U I), D T M and II (Cantab), I M S to Delhi as Medical Officer in charge of the camps appertaining to the Government of Bombay

LIEUTENANT COLONEL J B SMITH, M B, M Ch (R U I), D P II (Cantab), I M S is granted, from 16th November 1911 or the subsequent date of relief, such privilege leave of absence as may be due to him on that date in combination with furlough for such period as may bring the combined period of absence up to one year

In supersession of so much of Government Notification No 5740, dated 26th September 1911, as relates to the appointment of Captain W S Neilor, M B, I M S, His Excellency the Governor in Council is pleased to appoint Military Assistant-Surgeon J H C Peters to act as Civil Surgeon, Ahmednagar, as a temporary measure, pending further orders

CAPTAIN R W SUMNER, I M S, officiating civil surgeon, is transferred from Shahjahanpur to Fatehpur

CAPTAIN F P MACKIE, I M S officiating civil surgeon, is transferred from Fatehpur to Bijnor

CAPTAIN J J O KERRI M B, R A M C, is appointed to hold civil medical charge of Roorkee, in addition to his military duties, vice Captain B E M Newland, I M S

UNDER the provisions of Article 605 of the Civil Service Regulations, and with reference to Articles 435 and 436 of Army Regulations, India, Viz. para I, furlough out of India for six months, on account of ill health, is granted to Military Assistant Surgeon H J Willes, with effect from the date on which he may avail himself of the leave. Mr. Willes proceeds to New Zealand

DOCTOR H A MACFADYEN, civil surgeon, on return from leave, to Sultanpur

MILITARY Assistant Surgeon C G Thompson, officiating civil surgeon, on return from leave, to Garhwal

HONORARY CAPTAIN F G FOX, I S M D, civil surgeon to Khori, privilege leave, combined with furlough for a total period of fifteen months, from the 16th November 1911

CAPTAIN N S WILLIS, I M S, civil surgeon, has been granted by His Majesty's Secretary of State for India extension of one month's leave on medical certificate

MILITARY Assistant Surgeon H C Thompson, officiating civil surgeon, from Garhwal to Khori

MILITARY Assistant Surgeon F W Holmes, officiating civil surgeon, from Sultanpur to Basti

The service of Major V Robertson, I R C S (Ed), I M S, are placed at the disposal of the Home Department

The Hon'ble Surgeon General C P Lucas, C S I, I M S, has been appointed as a Knight of Grace of the Order, St John of Jerusalem in England

The following I M S officers passed the Examination of the London School of Tropical Medicine at the close of the Session in June 1911 —

CAPTAIN D HERON, and Major A Moorhead
Captain F V O Boit, I M S, Captain J H Munro, I M S, Captain O C C Shaw, I M S, passed in London, M D, in tropical medicine

MAJOR T B KILLY, I M S, is appointed specialist in ophthalmology from 11th July, and Lieutenant H Stott, I M S, specialist in diseases of women and children, Burma Division

CAPTAIN G S HUSBAND, M B, I M S, has joined the Punjab Jail Department

CAPTAIN J A ORWIC SHANK, M B, I M S, is placed on special duty, under the Sanitary Commissioner, India, from 20th July 1911

Notice

SCIENTIFIC Articles and Notes of interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles Letters, and Books for Review should be addressed to THE EDITORS, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Morris Thacker, Spink & Co, Calcutta

Annual Subscriptions to "The Indian Medical Gazette," Rs 12, including postage, in India Rs 11, including postage, abroad

BOOKS, REPORTS, &c, RECEIVED —

Monogitis, &c, J Wyllie H J Lewis
Errors of Refraction, E Clarke, (Ballière Tindall & Cox)
Diseases of the Ear, Willatt and Morgan Macmillan & Co
The Police Administration Report, Bengal

J B A Herd's Prevention of Disease (2nd Ed.) Pioneer Press
C A Merton's Conduct & its Disorders Macmillan & Co
Welsh Ophthalmic Catalogue
J Burnet's Handbook of Medical Treatment (J Currie & Co, Edinburgh)
Domestic Hygiene for Nurses, by J Smith, Churchill & Co
Lukis & Blackman's Tropical Hygiene Thacker Spink & Co
Synopsis of Surgery, Glover John Welsh & Sons
F H Ross Domestic Mosquitoes J Murray
Jones' Epidemic Diarrhoea Varabidko Press
Balfourne's Quinquevittium Green & Co

LETTERS, COMMUNICATIONS, &c, RECEIVED FROM —

Major B Seton, I M S, Simla Major S P James, I M S, Simla
Lt Col Maynard, I M S, Calcutta Dr Martin Leake &c, Calcutta
Lieut Macgregor, I M S, Tibet Major Flax 1 M S, Madras Major J G Murray, I M S, Murshidabad Capt Hunter, I M S, Jullunder Capt G Jolly, I M S Quetta Major Scott Moncrieff, I M S, Colonel King, I M S (ret'd), Fugland Lt Col D G Crawford, I M S, London Capt H Jack, I M S, East Surgeon Waue Major C G Barry, I M S, Rangoon

